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THE PLOUGH



THE LOOM AND THE ANVIL

J. S. SKINNER, EDITOR.



PHILADELPHIA:

J. S. SKINNER, 79 Walnut Street.

THE TERMS are in advance—\$2 each, where five unite—\$5 for two subscribers, or, for two years; and \$3 for a single one. Sixty-four pages monthly, printed in the best style, and on the best paper. The Work is stereotyped, and back Nos. or Vols. can always be supplied.

 *Of all tasks to an Editor, or to any man of proper sensibility, this is one of the most disagreeable !*

“THIS WHAT?” says the reader.

Why this thing of asking a gentleman for *money due*. Yet how otherwise, if gentlemen forget to fork over, are we to get along? For *we* are required to *pay as we go*! It's the business habits of large towns, and, moreover, it's what we would do, whether required or not; or *give up the publication of* “THE PLOUGH, THE LOOM, AND THE ANVIL.” Much too sorely have we suffered already the *unspeakable* bitterness of being in debt, ever to incur another. Now there is, probably, not a reader, who does not know whether he has remitted for the *second year* of this Journal. If not, why not at once inclose what is due, by mail, *at our cost and risk*! If it fail, we engage to be satisfied with his word, and to give credit, and thanks for the good intention, as if the money had been received. Why subject us to loss in commissions to collectors, if we had any; while, in the meantime, we are under obligation to pay as we go for every number—stereotyper, printer, paper-maker, binder, clerk, &c.? The heavy toll taken by the collector swallows up the profits of the publisher, without the least advantage to the subscriber, except it be, perhaps, the pleasure of gratuitous entertainment to the collector and horse! The terms require PAYMENT IN ADVANCE. And, while no one has to trust us for more than a very trifle, would it be reasonable to expect us to give credit to thousands, paying the cash for every item ourselves in the meantime? No, we are sure our patrons will not expect it; and while we are performing our part, with all practicable industry and fidelity, we feel confident they will perform theirs. Those who joined clubs and paid two dollars, can, without waiting, remit that amount by mail. Or, if they choose to send five dollars, it will pay for two years, and entitle them to the “Elements of Agriculture,” and to the best book on “Sheep Husbandry” ever offered to the American farmer. 

The Plough, the Loom, and the Anvil.

VOL. II.

JULY, 1849.

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THE TARIFF OF 1846,

CONSIDERED IN REGARD TO ITS EFFECTS UPON THE PLANTERS AND FARMERS OF THE UNION.

In our last we gave our readers a review of **THE PAST**, showing the effect produced upon the farming and planting interests by the tariff of 1842, during the few years that it was permitted to remain in operation. In doing so, we took the facts precisely as furnished from the immediate vicinity of the Treasury, while its chair was still occupied by the author of the tariff of 1846, in an article endorsed by the official paper as containing "a masterly view of the question." By aid of the facts thus given, we were enabled to show that in the five years following the passage of the law of 1842, the power to consume iron grew from 400,000 tons in that year, to 800,000 in 1847, and that thus the farmer and planter had obtained a market for their products equal to the price of 400,000 tons, or about 30 millions of dollars, leaving out of view the further market furnished by the men employed in building furnaces and mills, and machine shops, and the numerous houses required for the persons who worked in them. It was also shown that the power to consume cloth had increased so rapidly that the cotton manufacture had grown from 300,000 to 600,000 bales, giving to the planter that immense market for his products, and to the farmer the market afforded by the men, and women, and children, employed in the work of converting the cotton into cloth, and the thousands and tens of thousands of men employed in building mills, and houses for workmen, and constructing machinery for the mills, then constantly increasing in number. Again, it was shown that the woollen manufacture had grown in these years from 21 to 40 millions of dollars, affording to the farmer an additional market for wool and food, to the extent of almost all this immense difference. Further, it was shown that the power to consume coal had grown so rapidly, that whereas the whole demand upon the anthracite region of Pennsylvania, in 1842, but little exceeded a million of tons, it had risen in 1847 to three millions, affording to the farmer and planter an increased market for food, and wool, and timber, and others of the productions of the earth, to the extent of the price of two millions of tons, worth at market at least eight millions of dollars. The *additional* market thus provided for the farmer and planter in that short period, was shown to have been *one hundred millions of dollars a year*, and probably far more, and this was done by aid of the facts supplied by our opponent, who insisted that to carry into effect the doctrine that the plough, the loom, and the anvil should be brought to combine their efforts, would be to "annihilate all commerce, and, as a necessary consequence, all civilization," he having overlooked the fact that the highest evidence of advancing civilization is to be found in an increase of the power to consume cloth and iron. He belongs to that school of political economists which has great faith in the beneficial influence of ships and wagons, which produce nothing, and but little in that of looms and anvils, which produce much that is needed for the civilization of man.

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We propose now to examine **THE PRESENT**, by aid of facts, the correctness of which we think must be admitted as unhesitatingly as we have done by those presented by our opponents. In doing so, we desire to have special reference to the following passage from the recent Report of the late Secretary of the Treasury, in which is to be found the whole essence of that most elaborate document:

"The adoption by each nation of a high tariff is a war upon the labour of the world. As labour is more productive, capital is more rapidly increased and wages augmented. Yet the tariff, by compelling each nation to employ a portion of its industry in articles which can be produced more cheaply abroad, and refusing the exchange, forces labour throughout the world into less profitable pursuits, and, as a consequence, diminishes the products of labour as well as its wages. Thus, if silks can be manufactured at a less cost in Europe, and breadstuffs more cheaply in this country, and by high tariffs we prevent the import of silks here, while by similar tariffs abroad, or their inability to purchase from us because we will not take their fabrics in exchange, our breadstuffs are excluded to a greater or less extent from their markets and their silks from our own, labour is forced in both countries into less productive pursuits, and both parties have sustained a loss. International tariffs diminish the aggregate value of the profits of labour to the extent of hundreds of millions of dollars every year, and reduce correspondingly the wages of labour."

That the general theory of the advantage to be derived from perfect freedom of trade is true, there can be no doubt; but the question to be here decided is, whether or not, *in the existing state of the world*, perfect freedom is the system under which *we* should prosper most? There may exist disturbing causes, rendering impossible in the body politic the adoption of that which otherwise would be the true policy, as in the physical body there frequently exist disturbances which render it necessary to substitute salts and magnesia for beef and mutton. To determine whether or not such causes do exist, it is necessary to study the phenomena presented by an examination of the movements of our own community, and ascertain by the working of the two systems we have tried, which is the one—adequate protection, or that merely incidental protection which results from the collection of revenue, and approaches to freedom of trade—that has most tended to produce prosperity.

The Secretary says that protection is "a war upon the labour of the world," that it "diminishes the aggregate value of the profits of labour to the extent of hundreds of millions of dollars every year, and reduces correspondingly the wages of labour."

Here is the theory. If *true*, the practical results must prove it so. If they do not prove it, it cannot be true, for no theory can be true that is in opposition to facts whose accuracy cannot be disputed. If *true*, wages must have fallen from 1843 to 1847, and the power to consume food and cloth, and fuel and iron, and other of the necessities or conveniences of life, must have *diminished*, while a corresponding rise in wages and *increase* in the power of consumption must have been experienced in the past year, and must be now experienced. If *untrue*, wages and the power of consumption must have *risen* between 1843 and 1847, and they must have *fallen* in the period that has since elapsed.

The growth of population in the former period was probably not more than *fifteen* per cent., yet the power to consume domestic cloth and iron increased *one hundred* per cent., while the consumption of domestic fuel trebled itself, and yet the power to consume foreign commodities rose from year to year, and had attained as high a point as in any continuous period during the last twenty years. To save the reader the trouble of reference, we give the figures of the last eighteen years:

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Years.	Population.	Total consumption.	Per Head.
1830	12,856,165	\$49,575,000	\$3 87
1831	13,277,415	82,808,000	4 23
1832	13,698,665	75,327,000	5 50
1833	14,119,915	83,470,000	5 92
1834	14,541,165	86,973,000	6 00
1835	14,962,415	122,007,000	8 20
1836	15,383,665	158,811,000	10 40
1837	15,804,915	113,310,000	7 00
1838	16,226,165	86,552,000	5 40
1839	16,647,415	145,870,000	8 70
1840	17,068,666	86,250,000	5 00
1841	17,560,082	114,776,000	6 50
1842	18,051,499	87,996,000	4 90
1843	18,542,915	*37,293,000	†2 60
1844	19,034,332	96,390,000	5 00
1845	19,525,749	105,599,000	5 40
1846	20,017,165	110,048,000	5 50
1847	20,508,582	116,258,000	5 70

It is here obvious that protection did not diminish the value of labour in either domestic or foreign commodities, for the consumption of each and every one increased with a rapidity unparalleled in any nation of the world; and there was every reason to believe that it would go on with accelerated force. Throughout the country men were everywhere experiencing the benefits resulting from the diversification of employments. The farmer sold to the miner the timber that had heretofore encumbered his best lands, and his spare labour, and that of his wagons and horses, paying thereby for all the cloth and iron he could consume, leaving him a large balance to be applied to improving his farm, and thus increasing the product of his labour, with further increase in his power to consume cloth and iron. The daughter earned wages in the factory, and was thereby enabled to clothe herself, and to provide furniture for her future home. Everywhere men, women, children, wagons, and horses, were fully employed, and *the power of consumption grew with the power of production*. Such has been the case in every country of the world, and if we desire to measure the extent of the one, we have but to ascertain that of the other. Consumption grew with unexampled rapidity from 1843 to 1847, indicating a vast increase in production. How has it been in the last two years? How is it now?

In that time the growth of population has been more rapid than in any previous period, and it is safe to assume that it now exceeds that of the corresponding period in 1847, by at least eight per cent., or above a million and a half of people. At the same rate of increase that had been exhibited in the four previous years, the power to consume cotton would have risen to 900,000 bales, coal to five millions of tons, iron to 1,200,000 tons, and woollen cloths to more than fifty millions of dollars.

It is not necessary to our purpose to insist that such would have been the increase, although there is every reason to believe that such it would have been, and that it would, we ourselves entertain little doubt. When men are prosperous, the power to accumulate capital is great, and the power of production and consumption increases in a constantly accelerated ratio. It was, however, discovered that protection was "a war upon the labour of

* Nine months, September 30 to June 30.

† The consumption in nine months was at the rate of \$2 per head, equal to \$2.67 for the year.

the world," and that the power of the labourer to consume coal, and cloth, and iron, would be increased by a change of system, and the tariff of 1846 was substituted for that of 1842. What have been the results, we propose now to show.

The consumption of coal, which had risen in 1847 to three millions of tons, became stationary in 1848. Coal operators were ruined, and coal miners were deprived of employment. Mines ceased to be opened, and railroads ceased to be made. Labourers, first compelled to be satisfied with reduced wages, were next driven to seek the West, there to raise food, and thus to become rivals to the farmer, when they would have preferred to remain at the East, consumers of food and customers to the farmer.

In the present year, the quantity sent to market has been greatly reduced. Prices were so low that the operators could not pay wages out of the proceeds of the coal, and the consequence has been that thousands of men have been deprived of employment and rendered unable to purchase food or clothing. The consumption of this most important article has diminished, and is likely still further to diminish, and it is now doubtful if it will attain the same height as in 1847, whereas had the tariff of 1842 remained undisturbed, the consumption of this year would have reached four and a half millions. Here we have a loss to the farmer and planter of a market for six millions of dollars' worth of food and clothing, for all the labour represents these commodities, and the rents and tolls would have gone to further improvements, giving employment to labourers who have sought the West, there to become rivals to the farmer, and thus increase our surplus of food.

It may be said that the difference is made up in the consumption of foreign coal, also representing food. How far this is true may be judged from the following comparative statement of the import of coal into Boston for nine months of the two past years :

September 1 to June 1.	1847-48.	1848-49.
Virginia Coal, bushels	50,225	9,400
Anthracite, tons	153,753	124,900
Foreign, "	27,285	19,823

The power to consume foreign coal has thus diminished, although the domestic production has so greatly fallen off.

In 1847, the product of pig-iron had reached 800,000 tons. That of bar iron had greatly increased, and the manufacture of railroad iron, which in 1843 had no existence, had already attained the large amount of above 100,000 tons. In 1848, rolling mills were stopped, and their owners were ruined. In 1849, the owners of furnaces are likely to share the same fate. Pig-iron, which a few weeks since was at \$25, is now at \$19, and may fall to \$15, closing every furnace in the country. The power to consume iron is now less than it was in 1847, although the population has so largely increased, and if the price of iron abroad should fall still further, that power must be still further diminished, for we do not possess the means to pay for the iron that would require to be imported should our furnaces and mills be stopped. Had the tariff of 1842 remained unchanged, the product of this year would have been greater than that of 1847 by at least 200,000 tons, worth, in the various forms in which it is used, not less than fifteen millions of dollars, all of which would have represented food and clothing consumed, and houses occupied by the labourers who would thus have furnished to the farmer a market for that immense quantity of his products.

In no part of the world was the manufacture of iron making so rapid a growth as here, and in none was there so great an improvement in the mode of production. By improved processes, the yield of furnaces had almost doubled, and there was every reason to believe that a few years

would place that great interest beyond the reach of destruction from the unceasing changes of policy, and consequent vibrations in price, so constantly occurring in the system of Great Britain. Now, however, all goes backward. Rolling-mills and furnaces are closed and being closed, and such of the owners as have thus far escaped ruin are in a fair way to be ruined.

The manufacture of cotton cloth has also been stationary. North of Mason and Dixon's line, scarcely any factories have been commenced in the last eighteen months. Many of those already existing have worked short time within the last twelve months, and all have worked without profit. The owners of print works have been ruined, and no sane man would now invest his capital in such property. At the South and West some few mills have been started, and others are about to be so; but the increase there will not more than compensate for the decrease at the North. The product of 1849 will not exceed, even if it equals, that of 1847, whereas, had the tariff of 1842 remained unchanged, it would have increased to the extent of at least 200,000 bales. The planter has lost the market for his cotton, and the farmer for the food that would have been consumed by the vast numbers of persons engaged in quarrying stone, getting out timber, and fashioning both into houses and mills; and those other vast numbers that would have been engaged in making machinery, and using it in the conversion of the cotton into cloth, dying the cloth, and converting it into clothing.

So too with woollen cloth. The consumption doubled under the tariff of 1842, but it has become stationary under that of 1846.

The consumption of paper has diminished, and paper-mills are no longer built. The consumption of books has diminished, and printing-offices are being diminished in size. And so is it in every department of industry.

The consumption of lumber has greatly diminished. The quantity sent to market in the past season is far short of what it has been for several years past, and yet the tendency is to a constant reduction of prices, showing a diminished power to produce houses, mills, or roads, whose production would find employment for tens of thousands of those who now remain here idle, or of those who have already sought the West, there to become producers of food.

Let those who oppose the policy of protection examine for themselves, and they will see that the consumption of fuel, of cloth, and of iron, and of every other commodity required for the maintenance and comfort of man, has become stationary, even if it has not retrograded, notwithstanding the very large increase of our population in the past two years, and that there is reason to believe that it is not only less *per head* than it was two years since, but that it is actually less in *quantity*, and therefore *greatly less* per head. Having done this, let them determine which is the real "war upon the labour of the world," the system of 1842 or that of 1846.

Every diminution in the power to consume fuel, or iron, or cloth, and every diminution in the demand for stone and lumber for the construction of factories, and furnaces, and houses, affects the producer of food and cotton, for all these things represent only the food and the materials for clothing consumed by those engaged in producing them. This, however, is not the only manner in which the producer is affected. Those who are driven from the conversion of food and ore into iron, and food and wool into cloth, and food and iron into machinery, and food and clothing into furnaces, and mills, and houses, must apply themselves to the production of food or wool, and thus increase the competition in market among the sellers of those commodities, while diminishing the competition for the purchase of them, the necessary consequence of which must be the ruin of both farmer and planter, and the reduction of the wages of all engaged in the cultivation of the soil. In the last two years at

least 150,000 persons have been driven to the West, who would gladly have remained in the East, while those who have remained have been working at diminished wages, and tens of thousands have been idle, the necessary consequence of which has been a diminution in the power to consume food, which is therefore everywhere superabundant. From day to day, prices fall, and yet we have not even begun to feel the effects of the system which has converted so many consumers into producers. The foreign market has totally failed to answer the fond expectations of the late Secretary. The great railroad speculation of England, which produced so great a demand for food, cannot be revived. The potato-rot may not occur again. The wars, and revolutions, and blockades, of Europe, have cut off the supply of food from the Baltic, and yet the price of flour in Liverpool is but 23s., or \$5.50 per barrel, being equivalent to *considerably less than four dollars here*.* With the opening of the ports of the Baltic, prices will fall still lower, and our export of food of all descriptions to "the great grain market of the world" must totally cease. The power of the farmer to consume cloth and iron has already greatly fallen. The wages of his labour have fallen and they must fall still further, for we appear to be destined now to see grain and flour at as low a price as at any period of our history. With each step downwards, the power of the farmer to consume cloth and iron must diminish, and mines, and furnaces, and mills must be abandoned, and more and more of those still employed in them must seek the West, unless they will consent to work at *the diminished wages* consequent upon the introduction of *the new system that was to emancipate labour from the effects of the old one*, under which the power of consumption doubled in four years. With each such transfer, wages must fall still lower, for with each the surplus food, and wool, and cotton must increase, as with each the power to consume cloth and iron must diminish, and thus by degrees shall we approximate the rate of wages common in the Eastern hemisphere, and such must be the effect upon the South and South-west, as well as upon the North and West. The more the people of the North are *driven* to the work of cultivation, the greater will be the surplus of *all* agricultural products, the lower will be their prices, and the smaller will be the return to the labour and capital employed in producing them.

The wool-grower, who received 22 cents in 1845, now has 20. Where he then had 30, he now has 28, and there is every prospect of a further and great reduction. Old factories are closed, and new ones have ceased to be built. Foreign cloths have taken the place of domestic ones, and the power to consume cloth of any kind has diminished, and must continue to diminish.

The planter, who was to be enriched by the new system, is almost, even when not quite, ruined. The same quality of cotton that yielded him, in Liverpool, in January, 1847, seven pence three-farthings, now sells for four pence half-penny. He is clothing the world at his own cost, and to his own ruin. The thousand million of pounds that he now sends to market will exchange for less cloth and iron than he could have for three-fifths of that quantity five years since. The whole product of his great staple, notwithstanding the vast increase of population, is but little more than it was ten years since, and yet the average yield to the planters has not been five cents per

* For a table, showing the net product in New York, resulting from given prices in Liverpool, see page 52. One of the reasons why produce continues to be shipped is, that freights have fallen so low as to be almost ruinous to the ship-owner. The table is based on the payment of 2s. 6d. on a barrel of flour. In the few weeks that have elapsed since the date of its preparation, freight has fallen steadily until it has now reached 1s. 6d., making a difference of 24 cents.

pound, being less than the cost of production.* Rejecting the great domestic market, which doubled in five years, and would have doubled again in five years more, he has looked entirely abroad, and the effect is seen in the fact that he is everywhere endeavouring to substitute food for cotton, and thus to cut off one of the great markets of the West. The farmer, having proved "the great grain market" of Europe, and found it a failure, is now to lose that of the South, after having destroyed the manufacturers of the East, and compelled them to come to the West, to become competitors with himself in the supply of food.† We beg our readers to look fairly and candidly at all these facts, to lay aside prejudices, and to say if we are not right in predicting that the prices of food must sink to a point as low as any we have ever seen.

That the power of consuming domestic products is diminishing, and that it tends to diminish, is beyond a question. How is it with foreign ones?

In 1846, with a population of 21,000,000, *besides paying off a large portion of the debts contracted for in the free trade period a few years since*, we consumed to the extent of \$110,000,000, being per head, \$5.25.

In 1847, the increase of population was 750,000, and the consumption was \$116,000,000, or per head, \$5.33.

In 1848, we exported many millions of specie, and *ran largely in debt by exporting great quantities of certificates of State and United States loans*, and were thereby enabled to consume \$127,000,000, the population being further increased to the extent of 750,000—average per head, \$5.60.

* The cost of making 331,136 pounds of cotton last year, upon *one* of the best plantations of South Carolina, was \$17,894 48, or a fraction over five cents and four mills a pound, including freight and commission, as well as interest upon a fair valuation of property.

The cost, exclusive of freight and commission, and including interest, of making 128,000 pounds upon the "cane-brake lands of Alabama," last year, was \$6,676 80, a fraction over five cents and two mills a pound.

This is considered the richest cotton land in the world, and although the crop was called a small one, it was probably about an average one.

The field hands upon this place numbered seventy-five, counting all over twelve years old, which gives a fraction less than four and one-third bales to each.

Now this crop has to be hauled over about twenty-five miles of the worst road in the world, when wet, as they usually are at the time the crop is ready to go to market, and then down the difficult and dangerous navigation of the Tombigbee River.

I am satisfied that these two crops give a better showing than three-fourths of the cotton crops of the United States. My own opinion is, that whenever cotton is below six cents, it does not pay interest upon the capital invested, except, perhaps, in some few cases.—*Letter of Solon Robinson, to the Editor of the National Intelligencer.*

† South Carolina is now engaging largely in the culture of wheat, and everywhere the planters are abandoning cotton for sugar, as is shown in the following letter:—"On the day I left General McAustin's, I dined with Wm. G. Johnson, whom many of my readers will recognise as an old and very intelligent cotton planter. Finding he could not continue to clothe and feed a large number of negroes, many of whom had grown old with their master, he has abandoned cotton altogether, and suffered a large and once fine plantation to fall to decay, and wear the weeds of desolation, using it only as a stock farm and home for himself and old servants, while he has put all the able hands upon a sugar plantation, owned in company with his son-in-law, Wm. B. Walker, at Bayou Mauchac. There are several other abandoned plantations in Mr. Johnson's neighbourhood, where buildings and fences are tumbling in ruins, and beautiful gardens grown up in briars and bushes, and large fields covered with broom sedge, the whole making a scene of desolation that is painful to pass by. And these things are not only here—they are more or less to be seen all through the cotton region. For the truth is, cotton cannot be grown at the present prices. Mr. Johnson thinks that sugar can be made at three cents a pound, better than cotton at six; and that anywhere within the limits of sugar-growing, the same hands and lands will average, one year with another, one hogshead of sugar for every bale of cotton."—*S. Robinson.*

In 1849, our power to import is yet maintained only because *every packet and every steamer carries abroad large quantities of evidences of debt.*

That such cannot long continue to be the course of things, must be obvious to every one. State stocks cannot be made to any further extent, and those in market must be soon exhausted. The remittance of specie must be recommenced, and with every step in this process, prices must fall, and the power of consumption must be still further diminished. New York is now draining the West. Every day brings large remittances from the valley of the Mississippi, and each such remittance palsies the operations of that portion of the Union, diminishing the price of labour and the reward of the labourer.

The advocates of the existing system fill their columns with accounts of the large exports of food, but they *do not* inform their readers that the whole is a mere gambling speculation, that must prove ruinous should the English crop prove a full one. They *do not* inform their readers that at any reasonable freight the present price of flour abroad would yield here but \$3.75 per barrel, or that if the crops abroad turn out well, speculation will be at an end, and prices here must fall below \$4. They *do not* tell them that with all their boasted exports of food, and all the vast amount of debt now being created, there is a daily demand for specie to go abroad in payment for food imported in the form of cloth and iron, and that every such export tends still further to diminish the prices of commodities that are to be exported, to compel an increase of export, and thus to produce a further reduction of prices. The weight of provisions exported, *via* New Orleans, is greater by fifty-five millions of pounds, or more than fifty per cent., than in 1848; and on the lakes the export of grain has been so great that, at Buffalo, we are informed, "there is not storage room" for the vast quantities that have arrived, and yet *each day brings a remittance of specie from the West*, to make amends for the deficit in prices produced by the adoption of a system that renders us dependent on "the great grain markets of the world" for consumers of our products. New York is glutted with foreign food, in the form of cloth and iron, for which there is no market,* and with domestic food that cannot be exported to any port in the world, except at prices far below those now paid by our own people, engaged in the production of cloth and iron.

The ship-owner was to be enriched by the new system, but freights have fallen to a point almost as low as we have ever seen, notwithstanding the unexpected demand created for California, taking more than 300 ships out of market. But for that, they would have been far below even the present rate. How long they are to remain even where they are, no one can guess. But a short time since 2s. 6d. was the charge for transporting a barrel of flour to Liverpool. Gradually it fell to 2s., 1s. 10d., 1s. 8d., and now it has reached 1s. 6d., a rate that is ruinous to the ship-owner. Should the English crop of grain be a full one, it is not improbable that the rate may fall to 1s., which is the lowest point, as we believe, ever known.

The owners of steamboats were to be enriched, but the transport of mer-

* "GLASGOW IRON MARKET.—The pig iron market is very quiet; orders at 42s., cash, for mixed Nos. No. 1 was sold to a limited extent at 43s., and No. 1 Gartsherrie at 44s., cash. The heavy stocks of Scotch pig iron in America, and the unfavourable advices, per Cambria, will have a depressing influence on prices here."

"At the late Leipsic fair, very few cloths were presented, and these mostly of a very inferior quality, as it was supposed the market would be heavy. About thirty American buyers were present, and, contrary to expectation, the sales showed an advance on former prices, the stock being almost entirely closed for American account."

handise tends to diminish. The iron man cannot sell his iron even at the present low prices, and the wheat man cannot sell his wheat, and each stores it up in hopes of a change, the consequence of which is, that steamboats are unemployed.

The cities were to be enriched, and one of the "benign results" of the new system was to be that of making New York the great commercial city of the world; but throughout that city there is a universal complaint of dulness of trade, preparatory to a reduction of rents, and discontinuance of the building of houses.

The railroads were to have a vast business, but the grain markets of Europe have failed, and the consumers of the East have gone to the West to become producers, the necessary consequence of which must be a diminished power of consuming the manufactures of the East, and a diminished business for roads. Those who, in 1847, united for the making of roads, have been almost ruined by the effects of the last two years, during which the new system has maintained the price of capital at from one to three per cent. per month, and the disposition to make new roads is rapidly passing away.

The capitalist was to be enriched by the new system, under which there was to be a cessation of "the war upon labour and capital." The direct effect has been almost to ruin every man engaged in the payment of wages for labour. The man who had contracted to furnish the means with which to build a mill or a railroad, disappointed in the receipts from his business, was compelled to borrow money at two per cent. per month, and thus was he impoverished; while the usurer, the man who would not employ labourers, grew rich. With time old contracts have been worked out, and that market for capital having passed away, the extreme of high prices has been followed, and appears likely so to be, by the extreme of low ones. Loans are now being made at four per cent. Pennsylvania stocks, paying $4\frac{3}{4}$ per cent., are at 90. United States sixes are at 116, and thus governments are enabled to borrow at low rates, *because the market for labour and capital has been diminished by the new system.* Railroads are still made, where the object is to force trade to take some particular direction, but not as a mode of investing capital with an expectation of profit. Furnaces have ceased to be built, and most of those now in existence are likely to be closed. Of sixteen mills intended for the production of railroad iron, twelve are now closed, and the remainder are likely so to be. Cotton mills and woollen mills have ceased to be built. Ships are unprofitable, and steamboats are already in excess of the demand. Coal mines are no longer opened. Machine shops are in many cases almost entirely idle. Look where we may, it is impossible to discover, as we believe, any single mode of investing capital in a way that will yield a profit, except, perhaps, in speculating in government stocks, or land-warrants, both of them the product of the same system which gave us the tariff of 1846. The "war upon labour and capital," that was to terminate with the enactment of that law, has only now commenced. Capital and labour are both superabundant, because the labourer has no longer the power to command the use of the capital that was needed to render his labour productive, and the waste of labour, at this moment, from want of demand for it, *is more than would pay for all our imports* from every part of the world.

In 1846 we built roads, and furnaces, and mills, to an extent never before known, and *we paid off our debts abroad.* In 1849 we build nothing, and *we run in debt abroad.* In 1846 we built them by aid of domestic food, and cloth, and iron. In 1849 we are importing foreign food in the form of cloth

and iron, while our granaries are choked with that for which we have no market.

There is a glut of every thing needed for the comfort and convenience of man, because domestic exchanges are suspended. Throughout the West the farmers are storing away their grain, in hopes that another potato-rot may give them a market, and while they keep their food on hand they cannot pay for cloth or iron. Throughout the South, planters are combining to diminish the product of cotton, and increase that of food, while the farmers are unable to discover any mode of disposing of their surplus. The collier closes his mines, in hopes that by diminishing the supply he may obtain a price that will enable him to pay to his men such wages as will enable them to buy food and clothing. The wool-grower stores away his wool, in hopes to raise the price, and he can buy no cloth or iron. The iron manufacturer closes his furnace, because to sell at present prices would be ruin, and his people can buy neither food nor clothing. The manufacturer stores away his cloth, in hopes of better prices, and he needs little fuel or iron. These, however, are but "weak inventions," and soon will they be found to be such. The real difficulty consists in the fact that under the new system the power of farmers, and labourers, and working-men of all descriptions, to consume the products of labour, is diminished, and the system must be changed, or there must be a large reduction in the price of labour. The power of production is now less than it was two years since, and consumption must conform thereto.

There is a universal paralysis, and it must increase from day to day, until there shall be a change of system. We have now the real "war upon the labour" of the people of the Union, and so long as it shall continue, the condition of the labourer must continue to deteriorate. Thousands of men who would have found employment in the mines and furnaces of Pennsylvania, have gone West in the present year, to swell the amount of our surplus of food, and tens of thousands more will follow. Such is the case in every department of industry, and such will it continue to be, increasing in intensity from week to week and from month to month.

Were it possible now at once to re-enact the tariff of 1842, with a certainty of its permanence, how instantaneous would be the change! Every furnace and rolling mill, and cotton and woollen factory, would instantly be set to work, and men would everywhere be seen building new furnaces, and mills, and factories, and the wages of labour would instantly advance. The demand for food, for cotton, and for wool, would cause an immediate advance of prices; and the producers of cotton, and food, and wool, would find themselves enabled to purchase cloth and iron. The "war upon labour" would have ceased, and peace and harmony would have been restored, because exchanges had re-commenced. Consumption would then grow as rapidly as it did in 1845 and 1846, because production had increased, as the producer and consumer had been again enabled to take their places by each other.

Having first taken our opponent's "facts," in illustration of the beneficent action of the system of protection, by aid of which the farmer was enabled to entice the owners of looms and anvils to come and take their places by the side of the plough and the harrow, we have now furnished a few of our own in illustration of "the benign results" of the system of 1846—the offspring of that politico-economical school which looks to the growth in number of ships and wagons, of sailors and wagoners, and of cities filled with men who grow rich by the work of transportation and exchange, as evidences of an increase of wealth; and fails to mark the fact that men everywhere desire to avoid the necessity for employing ships and wagons, transporters and exchangers, and that everywhere they grow rich and increase in comfort and

happiness as the consumer of food is brought more and more near to the producer of food.

With every step in this approximation they find themselves enabled to consume more largely. The man who, stationed by the side of the producer of food and wool, employs himself in converting them into cloth, can consume of both more than he could do if they came to him at a distance of hundreds or thousands of miles, burdened with the cost of transportation : and the producer of food can consume more cloth when he gives in exchange for it the commodities produced on his farm, many of which, from their bulk, would not bear transportation, or from their perishable nature would be lost if not consumed on the ground, and for much of it the labour of himself, his sons and daughters, his wagon and horses, that would otherwise be unemployed.

Consumption is large wherever it is unburdened with the cost of transportation and exchange, and where it is large producers grow rich. It diminishes with every increase of the quantity of labour required for effecting exchanges, and with each such increase producers grow poorer, because production diminishes. If, then, the farmers and planters, the labourers and capitalists, desire to see the power of production restored to the point at which it stood three years since, enabling them profitably to employ their labour and their capital, let them unite in the effort to obtain the adoption of measures calculated to bring the loom and the anvil to take their natural places by the side of the plough and the harrow.

LABOUR-SAVING IMPLEMENTS.

"THE introduction of all labour-saving tools should always be carried to the extent of the farmer's means—it is a saving of capital in the saving of labour ; the horse-rake, for instance, which will save the labour of ten men, will, on a large scale, save to the farmer its cost daily.

"Hussey's Reaper, which costs \$100, will pay for itself in one year, in a crop of 1500 to 2000 bushels, in the saving of grain alone, to say nothing of the greater saving in labour, and the neatness with which it does its work. All these things should enter into the daily calculations of every tiller of the soil, and every farming utensil should be selected with an eye not only to the cost of repairs, but the neatness and facility with which it does the work."

Here we may mention, as to Hussey's Reaper, that we understood lately, in Baltimore, there were as many engaged as he could have done by harvest, and that the greatest demand came from where they have already been most in use, and their value best known. Some improvements have been made, with especial reference to giving them greater strength in essential parts.

A Fox's Lair.—The keepers and labourers of Mr. Legh, of Adington, suspecting that there was a brood of foxes in the park, set to work to dig them out on Saturday last, when they found six cubs ; and in the course of their digging in the hole they found the following ample stores provided by their parent, in a greater or less state of preservation :—the remains of one barn-door fowl, of four pheasants, one wild duck, two leverets, eighty rabbits, one jackdaw, one thrush, five rats, two mice, and one lamb. Some of these were nearly whole and fresh, others in a state of decomposition.—*Macclesfield Courier.*

ZINC.

THIS metal was first mentioned by Paracelsus ; but its ores were known at a much earlier period. In commerce it is often called *spelter* ; and is obtained either from the native carbonate of zinc, called *calamine*, or from the native sulphuret or *blende* of mineralogists. These ores are roasted and mixed with charcoal or carbonaceous flux ; the mixture is put into a kind of crucible closed at the top, and perforated at bottom by an iron tube, which passes through the grate of the furnace into water ; the vapour of the zinc distils downwards through this tube, and is condensed in the water. The first portions are impure, containing arsenic, and often cadmium, in which case the vapour burns with what the workmen call a *brown blaze* ; when the *blue blaze* appears the zinc is collected. The zinc of commerce (which is not quite pure) has a peculiar bluish colour and lustre, a lamellar and crystalline texture, and its specific gravity is about 7. At common temperatures it is tough and intractable under the hammer ; and when heated to above 500° it becomes brittle, and fuses at about 770°. But at temperatures between 220° and 320° it becomes malleable and ductile ; so that it may be beaten out under the hammer, and rolled into sheets and leaves, and drawn into wire, in a manner extremely remarkable when its highly crystalline texture is considered. Being a cheap and light metal, and one which, after having been superficially oxidized, long resists the farther action of air and water, it has lately been much employed as a substitute for lead in lining water cisterns and covering buildings ; it has also been lately employed in the curious operation of transferring printing, (under the name of *xincography*.) It is a very inflammable metal, burning in the flame of a spirit lamp with a brilliant white light ; but the oxide which forms interferes with its continuous combustion, which can only be carried on at a high red heat, when the vapour of the metal burns with an intensely bright flame, and yields at the same time a quantity of flocculent oxide, which floats about in the surrounding air, and was formerly called *philosopher's wool*, *pampholix*, and *nihil album*. The equivalent of zinc is 32, and that of its oxide 40. Though zinc is apparently without action upon water, yet it is a most oxidable metal ; but the insolubility of its oxide protects it from farther action, so that when a film is once formed upon it, it resists farther change ; but when a little acid is present in the water, and the zinc not quite pure, it is rapidly acted upon, and oxidized at the expense of the water, which evolves abundance of hydrogen, (when dilute sulphuric acid is used,) and the oxide of zinc is removed and dissolved by the acid. It is this action which renders zinc so powerful a generator of electricity in the voltaic pile. The salts of zinc are mostly soluble, and have a nauseous, astringent, and metallic taste. The *sulphate of zinc*, or *white vitriol*, is employed in medicine as an emetic and tonic, and the oxide and carbonate are externally used in the form of ointment. The *chloride of zinc* is a colourless compound, fusible at a heat a little above 212°, and known to the older chemists under the name of *butter of zinc*. Brass is an alloy of zinc and copper.

We have given place to the above from Brande, by way of a first offering to friends in Tennessee, New Jersey, and elsewhere, who have discovered ores of zinc, and are going into the business of preparing it for market. For the sake of the farmer, we want to see as many people as possible converted from being rival producers into profitable consumers of the products of the plough. Let the laws have that tendency.

PROSPECT FOR WHEAT IN TALBOT COUNTY, MD.

May 30, 1849.

DEAR SIR:—Above I annex a check for \$3, my subscription to your valuable paper.

Our wheat on good land is very promising, but on unimproved land, and where seeded late, it is greatly injured by the fly and bud-worm. I think the day will come when growing that crop after corn will be abandoned, from the difficulty of seeding it in time. We have not been able to dispense with fires except for three or four days, and the grass is very late. Almost an entire failure of clover. Our stock looks badly, and I should not be surprised if the skinning process had been resorted to in some instances, as was common here some twenty or thirty years ago* on cows of delicate constitutions, about the first of April.

Dear sir, your friend and obedient servant,

J. N. H.

MANUFACTURES AT THE SOUTH AND WEST.

WE take the following from one of the papers of the day, desiring to call the attention of our readers to the fact that everywhere throughout the South and West common sense is teaching the farmers and planters that “diversified industry” is necessary to prosperity, and that if the owner of the plough would grow rich, he can do so only by bringing the loom and the anvil to take their places by his side :

“Throughout the South, the attention of all classes appears to be turned to the diversion of a portion of their labour from the raising of cotton to manufacturing.

“A meeting of *mechanics and others* was recently held at Charleston, S. C., to form an association for their mutual benefit. The special object at which they aim, is to impress upon the public mind at the South, the necessity of a more diversified industry than prevails—of diverting a portion of their capital and labour from the culture of cotton into the various branches of manufacture, &c.

“In Georgia, they reported to the last Legislature, 32 cotton factories; while in Virginia, North and South Carolina, and Alabama, they are rapidly increasing. In Florida they have one cotton factory worked by slave labour, while the resources of the great valley of the Ohio and Mississippi (for manufacturing purposes) remain as yet wholly undeveloped.”

All this would long since have been done, had *the nation*, twenty years since, adopted the protective system as its fixed and determined policy. Had that been done, we should now occupy that position predicted by the Secretary of the Treasury, in his last report, as a necessary consequence of giving full protection to the producers of food and cotton in their efforts to induce consumers to bring their labour and capital to their sides, and thus enable them to apply themselves to the production of hay and corn, and turnips and potatoes, commodities which the earth yields largely, and which,

* Then they made two crops a year, as thus :

“Sambo, is your master a good farmer?” “Oh yes, massa fus-rate farmer—he make two crops in one year.” “How is that, Sambo?” “Why you see he sell all his hay in de fall, and make money once—den in de spring he sell de hides of all cattle dat die foz want of de hay, and make money twice—dat’s two crops, massa.”

Except that the *hay* crop is never made !

therefore, will not rear transportation. That officer tells us that whenever our manufactories shall, by aid of a protective tariff, have been fully established, the manufacturers will be clamorous for perfect freedom of trade ; and he must, therefore, believe that they will then have enabled themselves to supply cloth and iron at home, at prices not exceeding those at which cloth and iron are sold in other parts of the world, and thus have placed themselves in a position to do without protection. In corroboration of this view, and coming from the other side of the question, we take the following from an exchange paper which advocates freedom of trade, which, after describing a new and important addition to the list of American manufactures, says :

“ This adds one more chaplet to the wreath of American manufactures. Article after article, of foreign make, is cut off or *cut out* by American skill and ingenuity, until we are obliged to come to the conclusion that with judicious protection in infancy, the time is not far distant when the child, grown to a stalwart youth, will be able to throw down the gauntlet of free trade, and bid defiance to the world.”

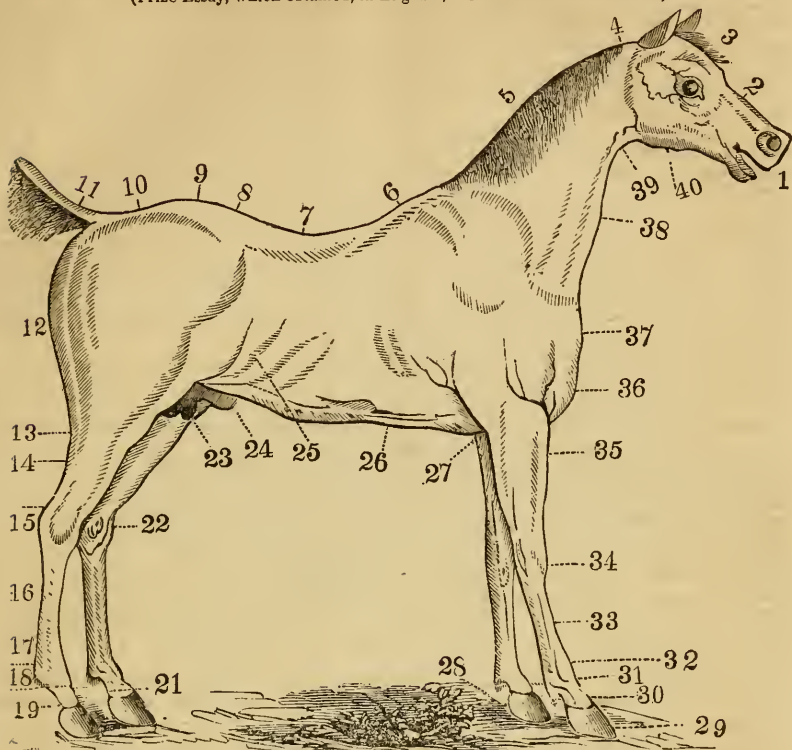
Let every man who desires to see soon established that perfect freedom of trade at which we are ultimately destined to arrive, unite in the effort to obtain that legislation which is needed to prevent the necessity for squandering over millions of square miles that labour and that capital which, if men could be permitted to live and work together, would enable them to cultivate the richer soils, with double return to both.

Thin Seeding.—The advocates of thin seeding for wheat generally lay great stress on the fact that the plant will tiller out, when thin sown, so as to cover the vacant spaces of ground. There is no doubt that this will be the case to a great extent, but it is, I think, certain that the plant is weakened by sending out so many stalks, and the grain rendered very uneven in ripening. I saw an instance of this last autumn, in a field where the wheat was thin, but very favourably situated in other respects, being a good soil, drained and unshaded. The preceding crop was cabbage, manured, in drills. The wheat was very thin in the early part of the season, but tillered greatly, and looked very well in summer ; however, it was most uneven in ripening, some spots being ready to cut ten days before others close beside them. I think this can only be accounted for by the plants sending out so many extra stalks. Do the thin seeders recommend sowing thinly, later in the season than the end of September or beginning of October ? It is not likely that the sparing plan, with respect to seed, will ever be much practised in this country, experience being against it.—*T. Bub, Ireland.*

Steam Plough.—A series of experiments of the application of steam power to the plough, has lately been made on a farm at Whitley, in the occupation of Messrs. Barrett, Exall and Andrews, the extensive iron founders of this town. Some practical and scientific gentlemen were present on each occasion, and they appeared much gratified with the success which attended the exertions of Mr. Exall, in effecting so great and important an improvement in the working of this implement. The experiments were regarded as satisfactory, on the whole, and, with a few slight alterations, the plough will be available for almost every, and especially heavy kinds of land.—*Reading Mercury, (England.)*

THE HORSE :

(Prize Essay, which obtained, in England, the reward of Five Pounds.)



TERMS COMMONLY MADE USE OF TO DENOTE THE EXTERNAL PARTS OF THE HORSE.

1. Muzzle.	11. Dock.	21. Coronet.	31. Large Pastern.
2. Race.	12. Quarter.	22. Ham, or Hock.	32. Fetlock.
3. Forehead.	13. Thigh, or Gaskin.	23. Stiffles.	33. Cannon.
4. Poll.	14. Ham-string.	24. Sheath.	34. Knee.
5. Crest.	15. Point of the Hock.	25. Flank.	35. Arm.
6. Withers.	16. Cannon.	26. Girth.	36. Breast, or Bosom.
7. Back.	17. Fetlock.	27. Elbow.	37. Point of the Shoulder.
8. Loins.	18. Large Pastern.	28. Heel.	38. Windpipe.
9. Hip.	19. Small Pastern.	29. Hoof.	39. Gullet.
10. Croup.	20. Hoof.	30. Small Pastern.	40. Jawl.

AN ESSAY ON THE EXTERNAL FORMATION OR STRUCTURE OF THE HORSE, AND ON THE DISORDERS ORIGINATING THEREIN.

Plerique omnes faciunt adole-centuli
 Ut animum ad aliquod studium adjungant, aut ad equos
 Alere, aut canes ad venandum, aut ad Philosophos.

TERENCE.

I PURPOSE, in the following pages, first, to give a succinct, but, I trust, useful and explicit description of the exterior conformation—the *make and shape* of that valuable animal the Horse; discriminating the *originally well formed* tit from the *cross-shaped*, and *likely-to-become-diseased brute*, and the *nag* that can go with safety and pleasantry on the road, or carry sixteen stone across a heavy country, from the *imbecile* and *weakly-constituted spider*; and, lastly, to show by what ready and

certain modes we may detect unsoundness in the purchase of a *prad*, and *when* we are to pronounce that *he is perfectly sound*.

THE HORSE, in the estimation of a sportsman, stands preëminent above other quadrupeds, as man does above every other animal: not only do matchless beauty and strength of form, combined with unrivaled speed, distinguish him, but the extensive utility he is of to us, and the share he takes in our diversions and perilous enterprises, serve to inspire us with even a de

gree of affection for him. Every horse is adapted to some particular purpose; for horses not only differ in kind, but, like men, in utility, in temper, in stamina, &c., and the selection of them, in regard to these particulars, constitutes one of the most arduous and nicest duties of the *connoisseur*; he must readily acknowledge good or bad conformation—trace genealogy in the outline, and discover a *je ne sais quoi* about the *tout ensemble* that denotes good or bad instinctive and unalterable qualities.

In describing the good and bad points of a horse, it will be necessary to make use of many terms, denoting different external parts, which, to all *horsemen* will not require any explanation; lest, however, the reader be unacquainted with some of those terms, a plate is annexed, having references to the parts themselves in the figure of a horse. It requires some experience, but more attentive observation, to be what, in modern horse phraseology, is called a *good judge*; i. e. (if we were asked to define a good judge,) to know, at once, by a cast of the eye, whether the nag, as soon as he is pulled out, is likely to suit: is he cut out for a hackney, or is he calculated for harness? Does he look like a hunter, or has he any good looks about him? Does he show any blood, or is he all over a mongrel? In fine, is he the sort of thing you want, or won't he do until he meets with a greenhorn? These, and various other important considerations we hope to unravel the nature of in the course of this inquiry, offering such remarks, from time to time, as may prove of practical service to the young and inexperienced horseman. At first sight of a horse, a judge takes a general survey of him, and if he observe any apparent disproportion or deformity, his attention is at once fixed to that particular point. Every horse, for example, that is tolerably well formed, should exhibit due proportions of limb and carcass; in fact, nine out of ten have as much carcass as is equal to the area of the space occupied by the legs in ordinary standing; but should his legs be extraordinarily long, or his carcass disproportionately small, he is said to have *too much daylight under him*, and that is certainly no mean objection. Should his head be very large, his neck of disproportionate length, his fore legs stand under him, or his quarters be ragged and ugly, such glaring imperfections cannot fail to attract our notice as soon as, or even before, the groom has set him on his legs. But we shall have occasion to particularize these things in a detail of the perfections and imperfections of the different parts entering into the composition of the animal.

The exterior of the horse may be divided, for the convenience of thus describing his several parts, into head, neck, body, and legs. First, we shall delineate a good head. The *nob* should be small. A large head is not only a plain head, but a bad point, inasmuch as it really, under certain circumstances, detracts from the powers of the horse; he has, in fact, more to carry—it is a burden to him, and the only way in which he can possibly carry it to advantage, is at the extremity of a short and upright neck. Like the weight of a pair of steelyards, if it is supported by a long and horizontal neck, its burden becomes enormously augmented, so that the weight transmitted to the fore extremities (for those parts support the head and neck as well as half the carcass) is much increased, and, from the natural preponderance of it before, is very likely to prove the cause of the horse's falling down,

more especially if the rider is heavy, every trip or mis-step he may chance to make. In addition to all this, a *lawyer* (or big-headed horse) is apt to have a *hard mouth*, or rather, we say, *no mouth*, so that we are always apprehensive of his being *heavy in hand*, and *unpleasant to ride*. It is proper, however, to state, before we proceed farther, lest we incur censure for these remarks, that the formation of the neck, and the *mode in which the head is set on*, and *how he carries it*, will have much to do with the head being objectionable from its size, and with his being light or heavy in hand; for we have known many big-headed horses ride well, and be as safe and as light in hand as any others. Next to size, its shape becomes a consideration. Every *feature* should give animation to the countenance; let the forehead be broad and flat; the eye staring and full of fire: the ears thin, fine, and often erect; the nostrils circular, dilated, and reddened within; the lips soft, thin, and hairless; the jaw extended, and the cheeks well marked.

"Fire from his eyes, clouds from his nostrils, flow."

This, at least, is what we would have it in the thorough-bred, and as a general rule, the nearer that of any other description of horse approaches to it, the better the family he springs from, and the more sanguine we may be in our prognostic of his abilities. That such a horse looks like a stickler, or is a perfect gentleman about his nob, are no uncommon nor very unmeaning expressions in the mouths of sportsmen and copers. But his head may be very long, or it may be very short, though we do not know that either is particularly objectionable, except as an eye-sore, if the countenance is something like what we have just described; unless he be a *Yorkshire man*, and then, certainly, we should not fall in love with such a big canister. The race ought to be perfectly straight, (see plate,) and the muzzle, in the blood horse, square, and such as will go into a pint pot; a Roman nose (one in which the race is curved) is by no means desirable, though his napper be but of ordinary dimensions; it is seen more commonly, however, in a big head, which it, in a side view, makes appear not only much larger, but exceedingly ugly; this may be said to constitute a plain Yorkshire head. Withal, the head, to render it handsome, should be well set on; its junction with the neck should form a sort of curve, so as to leave ample space in the throat for a large and prominent gullet, by which we may judge him to be a good-winded horse.

The neck now demands our attention: if good, the crest will form an arch of agreeable curve from the poll to the withers,

"With neck like a rainbow, erecting his crest."

It will be of proportionate length, and progressive increase in breadth, as it approaches the chest. A long neck, if it be straight, or but little curved, is objectionable, for reasons we stated when speaking of a large head; a short one, however excellent it may be on the principle of the steelyards, is never handsome and seldom exists without rendering even a good hackney piggish. That short-necked horses are better winded than others, because the air has less distance to pass to and from the lungs, is an opinion to which we cannot subscribe. The neck should also be thin, not thick and heavy, and rounded and straight along its lower margin; should the canal of the jugular vein be

deep, and the windpipe full and prominent below it, we may regard it as a sign of good wind. When the arch of it is reversed, *i. e.* below instead of above, and the crest, or what ought to be the crest, near the withers, is hollow and sunken, the horse is said to have an *eve-neck*, one of the greatest natural deformities common to these parts. Under these circumstances it is usual for a dealer to say that the neck is put on the wrong side upward; but, in reality, it appears to arise from the junction of it with the chest being too low down.

Of all the points of a horse, the shoulder, for a hackney, or a hunter, is of the utmost consequence; without a good shoulder, no horse can ride well; he may be a good harness horse, or he may race well; but it is physically impossible for him to carry his rider with ease and pleasure on the road. These are no speculative opinions, but facts, grounded on the experience of all men who know a horse when they see one, and the result of our own every-day observations—so much does the action of the fore extremities depend on the structure of this part. And now, what is it that constitutes a good shoulder, and how are we to know a good from a bad one? In order to render our answers to these questions intelligible, it will be necessary for us to deviate a little, and say something on the internal mechanism of the part. The *scapula*, or shoulder blades, are attached to the ribs by many powerful muscles, which move them, during the action of the animal, round their own axis, or, at least, in a very similar way; and though they can only revolve through the small segment of a circle, that segment is greater in proportion as they are more obliquely placed against the sides of the chest; hence it will be seen, that what is called an oblique shoulder is most advantageous for motion.—Again, the best shouldered horses have, generally, *thin* withers; but this is not indispensably necessary to the formation of a good shoulder, for we know some, and good judges, who are of a contrary opinion. We must confess, however, for our own part, that we prefer *fine* withers. The thickness of the withers will depend on the conformation of the chest and the obliquity of the *scapula*, and not so much as some persons, high in veterinary repute, have supposed, on the length of the *dorsal spines*.* Now, if, in viewing the fore parts of a horse, we find he rises upon the withers, (and we must take care that this be not an illusion, produced by placing his fore legs upon rising ground,) and

* Bones of the withers. It is contended, on another side, that the situation of the scapula has nothing to do with the thickness of the shoulder, but that it is wholly owing to the length of the spinous processes of the dorsal vertebrae. To establish this opinion must be proved two data, viz: 1st, that these spines are short, or comparatively so, in all thick-shouldered horses, and long in thin-shouldered ones; and, 2dly, that the converse of this never happens. To one who has dissected shoulders, these are certainly home-thrusts; such, at least, as we could not parry; though we know that the dimensions of these bones may and do, like those of most others, vary in different horses. But they also vary in their degrees of inclination; and may not this circumstance alone, in some measure, affect the construction of it? At all events, we know these facts, dray or cart horses have wide chests and thick shoulders; others with wide chests have thick shoulders, but with narrow chests thin, unless the scapula be upright. Now, if they who differ with us, mean to assert that all this arises solely from the length of the dorsal spines, we can only say, *credat judex appella*.

that no traces of his blade-bone can be seen under the skin, but all appears smooth and level, we may conclude that the shoulder is oblique; though a more direct proof is furnished us by carrying the eye from the summit of the withers to the extremity of the point of the shoulders. If it is upright, or nearly so, unless it be in a thorough-bred horse, (such a shoulder is only fit for the collar,) we shall perceive an irregularity under the skin, just below the withers, by passing our hand over the part, and find, on grasping the part, that it is thick and clumsy, because we are actually at the time grasping the blade-bone as well as wither-bone; though (as before observed) these may be thick from the construction of the chest.

A lean shoulder is one having thin withers, covered with fine and genuine muscle; a loaded, or overloaded shoulder, one with thick withers, clothed with coarse and flabby muscles; and the thickness of the wither, as was said before, depends on the obliquity of the shoulder-blades, and the proximity of their superior borders to the dorsal spines. That horses have been fast runners on the turf with bad shoulders, is no proof that they would not have galloped better and quicker with good ones; and we must recollect that in a racer the hind quarters are of primary importance, the fore quarters only of secondary consideration; but, on the road, we know that bad-shouldered horses are never pleasant nor safe hackneys; they step short, are puddling walkers, roll about in their trot, and are exceedingly likely to go to prayers.

The fore-leg should descend in a straight line from the bottom of their shoulder, *i. e.* in a lateral view; but when seen in front, it ought to incline gently inward. If the elbow projects directly backward, and the toe points with precision forward, we may rest satisfied that the horse is not twisted in his fore legs. Turning the toe in or out in standing is apt to be accompanied with distortion, or deformity of the limb. This circumstance, therefore, is seldom seen without materially lessening the value of an animal. Of the two faults, turning them out is the greater, for the pointing inward is seldom carried to the extreme. A good arm is broad and thick, long, when compared to the leg, and marked exteriorly by muscular prominences. The elbow cannot project too far back, and the plumper the muscle is immediately above it, the greater we may conclude to be the animal's powers.

The knees ought to be large, broad in front, and distinctly marked with several bony knobs; lateral thickness is, also, of much importance. When the radius, (the bone of the arm,) instead of descending in a straight line, is directed backward, so that the knee appears to recede from it, the horse is said to be calf-kneed, a term that well conveys the idea we have of this formation: it is always objectionable for the saddle, but not for the collar. The leg should fall in exactly perpendicular from the carcass, and be short when compared with the arm, the converse of this being indicative of weakness; and of sufficient breadth to enable a purchaser, even at a distance, to distinguish the tendons and bone, with perfect clearness, in their relative situations; for, if he cannot do this, there is reason for suspecting that he is gummy, the effect of hard work or premature use, and never a natural defect. Should the legs be round and straight below, they are called stilty, and

are never *firm and good*. But the best and only correct way to judge of legs, is to pass *the hand down them*; if they measure much round and the sinews feel firm, hard, and distinct, like well-braced cords, and if the intervening spaces between bone and sinew be *clean—free from gum*—we may pronounce that they are *good*.

The *fetlock*, as a joint, should be of large dimensions, proportionate with other parts; no joint, in fact, is too large, providing its *bony prominences* be distinctly seen with the naked eye, and its *ligaments* perceptible under our fingers. I need not, therefore, farther enforce this truth in speaking of these organs. *Knuckling over* in the fetlocks is a sign of original malformation, such as *uprightness* in the pasterns, or else is the result of hard work; and the tottering affection of the limb, accompanying this state, is caused by local debility and excessive irritability in the nervous system. The pasterns always deserve much of our attention; when *good*, their *length* is proportionate with that of other parts, and they incline, with *much obliquity*, downward and forward to the foot, should they approach the *perpendicular*, they are almost always short, and are said to be *straight* or *upright*; but when they approximate to the *horizontal*, they are long, and called, though erroneously, *oblique*; for they are not so obliquely placed, under these circumstances, with regard to the leg, as they are when properly constructed. Perhaps no part of the horse exhibits the wisdom of Nature more, in regard to the adaptation of it, in point of structure, to the purpose for which the animal was designed, than this: in the racer, for example, the pasterns are *lengthy*, and incline to right angles with the legs, whereby more weight is imposed upon the hinder parts of the fetlock and hoof, in which situations are placed *pieces of mechanism* which by their elasticity serve as so many springs in diminishing the effects of concussion so requisite in this animal, which was intended to perform *swift and sudden* movements; but in the cart-horse, whose action is *slow and powerful*, the pasterns are *short and nearly upright*, so that most of the weight is thrown upon the main bones of the foot, and thereby his springs, which have less play than those of the Arabian or thorough-bred, are not so much acted upon; consequently less provision is made against concussion, for strength, and not elasticity, is sought for in the construction of this powerful animal. Horses with very oblique pasterns are more likely to *break down*, and for this reason they ought never to be shod with thin-heeled shoes; on the other hand, if they are very short and upright in these joints, they are seldom or never sure footed, and will soon become *stilty and groggy* from work.

The *hoof* next engages our notice, and this is a part of which we should be more than commonly scrupulous and nice in our inspection: "*No fool, no horse*," is a trite but very true adage, and one that is not kept sufficiently in view by the purchasers of horses, or they would not have so frequently to lament their *hard fate* in having *gone to market for a screw*. First, we should look to the size of the hoof: a *small* foot is not only objectionable in itself, even though it be a natural formation, but is often a characteristic of disease; but a *small and upright* foot is a morbid structure, and is scarcely ever seen in any one but a *dancing-master*, or light-timbered tit. White hoofs are to be eyed with suspicion; they are really weaker, and

more liable to disease than dark or black ones, and if a horse has one white and the other dark-colored, and he is lame, in nine cases out of ten it is the white foot that is affected. So much with regard to the exterior of the foot—before it is *taken up*. Other considerations now engross our attention. Is it contracted? *i.e.* is its circularity destroyed by narrowness at the heels? A *good* hoof is *circular* in the tread, or nearly so, measuring as much from side to side as from toe to heel; but we frequently find those that are morbid measuring as much from toe to heel as twice the lateral diameter. On the other hand, the *wall of the hoof*, which should, at all times, be perfectly *smooth* and free from ridges, (the contrary indicating disease,) may be very *oblique*, in which case it is not only *circular*, but *spreads out*, even to a morbid degree, in the tread. Large, heavy horses, such as are bred in low, marshy situations, are most subject to have this kind of foot, in which parts of the country it is preferred by many people, who contend that their hunters derive advantages from it. As the *strong and upright* foot is likely to become *contracted*, so is this subject to a disease called *fleshy soles*; indeed, in the former, the sole is concave; but in the latter it is flat, on which account the two require different modes of shoeing.

The *body, or carcass*, may be subdivided into the chest, belly, and loins. So far as regards the *constitution* of the horse, his *stamina*, or his *bottom*, no part is of more consequence than the chest; but, like that of many other parts, no particular construction of it is the best for all kinds of horses. That of the cart-horse should be *circular, broad in the bosom, and large in the girth*; that of the thorough-bred more circumscribed, but not *flat-sided*, very *deep*, and, also, extensive in the girth; so that the two differ more in *width* than in *depth*. Had the racer possessed a broad, circular chest, his shoulders must have been thick, and his fore legs far apart; and no horse so made can gallop well or fast, though many such are ridden as hackneys; they are apt to have a rolling gait, and an awkward mode of going altogether, perceptible at all times to the *connoisseur in horse-flesh*; but we must be careful, even in choosing racers, not to run into the other extreme; for, if *both legs come out of one hole*, or he be *flat-sided*, he cannot endure much fatigue, is very probably a *bad feeder*, and certainly predisposed to disease of the chest. A *full and prominent* bosom is a fine point; and the ribs should *stand out* with sufficient curve to afford space enough within; for which reason, some, as we before remarked, prefer a *thickish* shoulder, if it be an oblique one; and another advantage accompanying such conformation is, that we have something *between our legs* when mounted, a property, certainly, that every horse ought to possess. As to the belly, its shape will depend much on that of the chest and loins. A *narrow-carcased* horse can never *do much work*, readily loses his condition, and with difficulty recovers it, being, very commonly, but a *queer feeder*. We should have something to *kick against*, and unless he carries his dinner with him, his *bread-basket* cannot be said to be of the best description.

The *back* should be perfectly *straight*; a *hollow* back is a sign of want of strength; but it is often extremely pleasant to the rider. A *roach-back*, the reverse of a hollow back, is by no means handsome, though some argue that horses having such are stronger; one objection to it is

that it is apt to chafe from the saddle. The loins are a point that we should always be nice about. A *hollow* back and a *narrow* loin are generally indicative of natural weakness; but the latter is far more exceptionable than the former: a horse so formed can seldom carry much weight, soon knocks up, and often proves a bad feeder; his constant *hollowness* in the flank, and his *lank* appearance altogether, after a day's hunting, demonstrate how incapable he is of bearing the exertions required of him.

The tail, in regard to the manner in which it is set on, is not to be overlooked: a horse that carries *two good ends*, (of which the head forms one, and the tail the other,) always looks grand—is a perfect gentleman in his appearance. Above all others, the charger should possess this point in perfection, to coincide with the *grandeur* of his carriage in the ostentatious parade of a field-day. *Hinc bellator equus campo sese arduus infert.* The tail, in most horses, should form, when elevated, a straight line, or nearly so, with the back. A gentle declivity of the *croup*, however, from the summit of the rump, denotes the *blood-like quarter*, and adds much grace to this part in the thorough-bred: should this line decline very much, the horse is said to be *droop-arsed*, and the quarters lose much of their beauty as well as their natural power. Nothing is so ugly, in a *full-quartered* horse, as to see the tail set on low down, issuing abruptly from the rump, as if a broomstick had been stuck in the place. The dealers who indiscriminately fig all, often spoil the sale of a horse of this description by curling the tail upward with a dose of ginger. Some horses carry a good tail naturally—others, by means of art, having undergone the operation called *nicking*. *Gingery* or *peppery* hackneys seldom require *nicking*: indeed, hackneys are often called, from this circumstance, *cock-tails*, in contradistinction to *thorough-breds*, who seldom or never carry any but a *drooping tail*, better known by the name of *blood-tail*; a *cocked-tail* would be incompatible with a *blood-quarter*: hence it is that blood-horses should never be *figged*, or *nicked*.

The quarters may be *full*, *small*, or *fine* and *blood-like*. *Full* quarters are such as are possessed by cart-horses, large machine-horses, and hackneys able to carry great weight. These horses are wide in the hips, though their hips are but indistinctly marked, in consequence of being enveloped by large, coarse, flabby muscles. People are too apt to regard *wide hips* as an objectionable point, from their giving to the horse that appearance called *ragged hips*, which, indeed, are not only ugly, but denote bad conformation, though, of themselves, they denote good make; for the fact is that *ragged hips* are produced by a *bad loin*, and a *lank, flat* and *weak* quarter. Were these parts well formed, we should pronounce the hips to be of the best description. The *small* quarter is one that is often seen in a horse of this form; though the general contour of it may be *regular* and *uniform*, it is altogether *disproportionately small* when compared with the carcass: if it grows narrow toward the hinder part, the animal is often said to be

goose-rumped. But, of all other structures, the *blood-like quarter* is the best adapted for speed: in it the tail is set on *high up*, and the hips are high and prominent, but not *ragged*; so that many of our best racers are *higher behind than before*, the spaces between them and the points of the quarters *great*, as are also those between the latter parts and the stifles; the haunches want the *plumpness* and *roundness* of the full quarter; but, so far from being either *lank* or *thin*, are *striped with bold and prominent muscles*, which, being free from the *adipose* and *cellular substance* that constitutes the *flabbiness* of those of the full quarter, are so distinct, even through the skin, that we can distinguish where one ends and another begins. The stifles should *project boldly forward*, and have a perceptible *irregularity* of surface. The thighs are *good*, when *long, thick and muscular*; little *hills*, or *rotundities*, upon them, mark the course of *muscles*, and always denote great power; the nearer the angles which they form with the parts above and below approach to *right angles*, the more force the muscles can exert; *ergo*, the more powerful the horse. The hock, of all other parts is in the racer of the utmost importance; it should be *broad, flat*, and of *large dimensions*. The propulsion of the machine is effected chiefly by those muscles that are attached to the point of the hock; so that the more projecting this is, the greater the force they can exert, simply on the principle of the lever: as a man with a long oar can row with more facility and effect than he who uses the short one, or *scull*, so can a horse with broad, projecting hocks *get over the ground* with comparative ease to himself, and pleasure to his rider. The advantages the *half-bred* horse with *good* hocks possesses as a hunter, are of no less moment than those a *good* hock confers upon the racer: his great propelling powers will enable him to *clear his rasps** with so much grace that the rider will find it a *difficult matter* to pound him,† and empowers him to make such play in the mud as will soon sew up his *lank-thighed* and *straight-hocked* competitors. The point of the hock cannot stand out too much; indeed, the greater its dimensions, altogether, the better, provided it be not *gummy*, or that its various *bony projections* and *sinevy parts* be distinctly seen or felt. If the hock is narrow, its point round, and not well defined, it is said to be *straight*, and from being very liable to *curbs*, is often called a *curby-hock*: should its point be directed inward, and the toes turned outward, the horse is *cow-hocked* or *cat-haumed*. As this is a part very liable to defect, as well as to original malformation, the nicest examination is required to detect all that may prove disadvantageous or injurious to its function, the proper performance of which is of so much importance that the propulsion of the whole machine depends chiefly upon it.

REMARKS ON THE PURCHASE OF A HORSE.
—Having selected a horse whose make and

* *Rasper*, a high and dangerous leap.

† Surrounded by inaccessible rasps.

shape please us, our next consideration is his soundness; for, though the horse-dealer may declare that he is as *sound as a bell*, we are to take the phrase as one having various meanings, and not be deterred from examining him, and narrowly, too, on that account. *Sight, wind, and limb*, must be the uppermost objects of inquiry; for nine hundred horses out of a thousand are defective in one of these particulars. First, then, examine his eyes, and do this before he comes out of the stable. Having placed him so that the light may fall upon the eyes but in one direction, see that they are of the same size, and equally full; that the haws are not prominent, and that one does not project more than the other; that the eyes are perfectly clear and transparent; and that the pupils, or *apples of the eyes*, are exactly alike in size as well as color. A sunken eye, or one over which the lids are partly closed—a projecting haw—an opaque or semi-opaque front*—a pupil dilated, or a white or clouded one—are so many omens of disease, for which we should reject the *prod* as a *cupid*.† or, what is often worse, a *blinker*, who will shy at all he meets with, and break your neck the first *poser*‡ you ride him at. Having satisfied yourself in regard to his *peepers*, have him *pulled out*, and next proceed to examine his *pipes*. If *good and sound*, on being nipped in the gullet, he will utter such a sound as cannot fail to strike the ear as the emission of a *good pair of bellows*; but if his *lungs are touched*, and he is a *piper*, (that is, *broken-winded*, or *having no wind at all*,) he will give vent to a *dry, husky, short cough*. Should a horse be suspected of *bad wind*, however, the purchaser cannot do better than direct his attention to the flanks, which, under such circumstances, will work either much quicker than ordinarily, or heave deeply, and with great ir-

regularity; they will be considerably longer in contracting themselves, in order to squeeze the wind out, than in falling to let it in,§ which they do, if he is a *piper*, quite suddenly. But, though not a *piper*, he may be a *whistler*, or, what is worse, a *roarer*: the first may be known by the peculiar *whizzing* he is addicted to when put to sudden or long-continued exertion; the latter, by *blowing his horn* clamorously under similar circumstances; and either may be made to display itself, by the purchaser giving him a smart cut, or even feigning to do so, with his *bit of ash*.

Thirdly, and lastly, as to the limbs. If, in passing our hand down his legs, we find any unnatural protuberance or puffiness, or if, in feeling first one leg and then the other, we discover any difference between them, disease, more or less, is present; he may not be *lame*, but he is not *clean upon his legs*. *Splents, windgalls, and ringbones* may be present without occasioning lameness, but they are all unnatural, are considered *blemishes*, and are all to be regarded with a suspicious eye, as either denoting past *hard work*, or betokening future evils. On the same principle, a horse may have a *spavin*, and be *only stiff* from it at *starting*, or he may have a *curb*, or a *thorough pin*, and be *perfectly sound*; but these are still *blemishes*, and as such detract from the intrinsic value of the animal. In explaining the advantages resulting from *good conformation*, we are *naturally* led to make remarks *en passant*, on the disadvantages from *bad*; in pursuance whereof, I have shown *why* such a structure is *bad*, a question that *necessarily* entails upon us the mention of the *disorders originating therein*; i. e. the diseases to which such parts, in consequence of being *malformed*, are *predisposed*.

INOPES.

WHY FARMERS SHOULD BE THE FRIENDS OF MECHANICS AND MANUFACTURERS.

SOME days since, in our office, we were favoured with a visit from a Scotch gentleman, as venerable for his age and virtues, as he is remarkable for sound, vigorous sense. He was, some thirty years ago, among the founders, in Philadelphia, of the Society formed for the Encouragement of Domestic Industry. He observed, that when once a farmer himself, he was anxious for the prosperity of all American mechanics and manufacturers, for *two especial reasons*!

1. Because, if they did not succeed in their own business, he was fearful they would become rivals in his, if only to make sure of bread; and 2dly, because the more prosperous they were, the better prices they could give him for what he had to sell. In a word, he wanted them to be numerous, to increase their competition; prosperous, for the sake of better prices; and near to him, that between him and them they might divide the saving in the cost of exchange. This seemed to us to be the true “common sense” view of the subject; the contrary, *uncommon sense*.

* Transparent cornea.

‡ Expiration.

† A blind one.

§ Inspiration.

‡ So called from *planting* all but the *nonpareils*.

[From the New York "Wool Grower and Magazine of Agriculture and Horticulture."]

LETTERS ON THE WOOL TRADE.

By J. B. NOTT, Esq., *Secretary New York State Agricultural Society.*

TO WOOL GROWERS.—No. 1.

AGRICULTURAL ROOMS, Albany, May 25, 1846.

J. M. SHERWOOD, Esq., *President of the New York State Agricultural Society:*

My attention has been drawn to the letter of HAMILTON GAY, Esq., of New York, addressed to the Editors of "The Journal of Commerce," and published by them on the 21st.

To the wool growers of New York, this letter is one of deep interest, and should be extensively circulated. Mr. Gay, at great personal and pecuniary sacrifices, has rendered manifest those obstacles which stand in the way of a profitable exportation of American wool. Our obligations to him are by no means trivial, for giving notoriety to facts, which show most conclusively that it is in the power of the American wool grower so to extend the market for his staple, as to give it a healthy and a reasonable activity—thus securing to present prices a steadiness and permanency which they are not otherwise likely to receive.

It has been more than intimated by the manufacturér, that he is desirous of reducing the prices for the incoming clip, some four or five cents per lb. below the prices of last year. The announcement has produced anxiety and alarm; but it would seem probable from Mr. Gay's letter, that if this is so, the exporter will cause the manufacturer ultimately to regret his selfish temerity. The causes which have chiefly marred the success of Mr. Gay's experiment, are, in his estimation, the unclean condition of the fleeces, as they come from the hand of the shepherd, and the heterogeneous character of the lots of wool, as they come from the lots of the wool collector. There is no doubt that he is perfectly correct in his estimate, and it is equally undoubted that he might have said, that these same causes operate injuriously upon the interests of the American grower of fine wool, even in his own market; and unless removed, this department of agricultural industry will receive a blow from which it will with difficulty recover.

It is, however, too apparent, that neither the letter of Mr. Gay, nor the remarks of any one else, will have an efficient agency in correcting the faults of the unwary or the frauds of the dishonest. The evils complained of, can only be cured by making a radical change in the mode of conducting the wool business; they have sprung almost exclusively from this source, and if it is amended, a cure is certain to follow.

Nor is the change requisite environed by insuperable difficulties—it will at once be secured by a hearty, vigorous, and concerted effort, on the part of those whose interests are most deeply affected: indeed, it is more than certain that the change has already commenced. Had not inspection laws become deservedly obsolete, here would be a legitimate field for their operation. But as it is unwise to revive the absurdities of a bygone age, we must carefully inquire if we do not hold in our own hands a remedy more effective than any that can be furnished by legislative enactments.

Fleece wool is of such a nature, and the mode of transmitting to the manufacturer such, that neither the faults of the wool, nor the frauds of the shearer can be detected until it reaches the hands of the stapler. Were it furnished by each individual farmer in lots so large, that the expense and trouble of stapling each lot separately would not be too onerous, it is appa-

rent that then each lot could be traced to the particular spot from whence it came, and self-interest would soon apply an efficient corrective both to faults and frauds.

But wool is now collected in small lots from an immense multitude, in a way that it is not possible to trace each lot. The collectors for the most part are unable to discriminate properly between their different purchases, or if able, have not the wisdom or liberality to make that difference in price, which simple justice and sound policy demand.

So long as the profits on sheep husbandry were so excessive as to satisfy the most grasping cupidity, men preferred being careful and honest, to being mean and careless; but, after the profits have fallen to that level, above which no agricultural business can long continue, it is not to be wondered at, if a great and rapid deterioration takes place in the quality and condition of the article, since there is no fair and equitable discrimination made in its market value.

This brings me to a point not touched upon by Mr. Gay, but one to which it is apparent the American manufacturer of broadcloths cannot be indifferent; and which should be at any rate pressed most forcibly upon the notice of the growers of fine wool.

The present mode of purchasing wool has already had the effect to deteriorate the character of the flocks over large sections of the country. There is now an almost universal complaint, that there is no adequate discrimination in price; the evil is most seriously felt, and men are in hot haste to make changes in the character of their flocks, which they, as well as the manufacturer, will, ere long, it is to be feared, seriously lament. The changes now being rapidly made would soon be complete and irretrievable, were it not that there are some men, who, either from the magnitude of their clip—or from business connections—or peculiarity of situation—or some other cause, deal directly with the manufacturer, and not with his factor, and thus obtain prices which bear some sort of relation to the stapler's estimate of the value of the wool. If it be important to the manufacturer of fine cloth to put a stop to the degradation of our flocks, he will surely see that it can be done only by putting an end to the present manner of conducting the wool trade, and will at once lend his effective aid in bringing about a result so desirable to the prosperity of the American farmer.

As a very large proportion of the wool purchased by the wool factor is obtained from men who keep but small flocks, and who have therefore no character to sustain as flock-masters, it is very apparent from the laws of trade, that however bad may be the condition of their wool—unless it is separated in the market from that of others, who are truly flock-masters, it will more or less, according to its quantity, materially affect the price of the other, though a superior article. To show clearly that I am not mistaken in this position, allow me to direct your attention to the unwashed and filthy wool imported last year, costing under 7 cents per pound, and its influence in regulating prices. I was shown imported wool by a manufacturer, which cost him, in the condition it then was, 13 cents per lb. Yet it was equal in appearance to American wool worth 35 cents per lb. Owing to the shrinkage of this wool, however, it took 3 lbs. of it to make 1 lb. when it was worked into cloth, which therefore was equivalent to 39 or 40 cents per lb. American wool, worth 35 cents per lb. will shrink about $\frac{1}{2}$ in its preparation for cloth, and therefore cost, when in cloth, about 43 or 44 cents per lb. It is, therefore, apparent that this filthy, foreign wool, last year, had a material influence in ruling the market price of American wool of medium quality.

Tag-locks, filth and twine cannot enhance the value of any portion of the wool in market; nor ought a system to be longer tolerated that makes little

or no difference in the price of wool thus basely contaminated, and wool wholly free from censurable impurities. Look at the consequence: the price obtained may adequately remunerate the grower of the one, while to the grower of the other it is utterly ruinous.

The one keeps his small flock poorly and cheaply by the road-side, or on the refuse of his farm, while the flock of the other consumes the entire or chief product of the farm, and the wool he yields is the only or main crop that its owner carries to market. To each therefore the same price will not bring the same returns. The one may and will probably continue to raise wool in his small way, without any material change in its condition, whatever may be the result of any effort to alter the absurd practices of the wool trade. But the other cannot and will not long persevere as a wool grower, unless there is an alteration: and if the present sheep-walks are in consequence turned into ploughed fields, the ordinary farmer will, in his turn, experience the ruinous consequences of neglecting studiously to foster such modes of marketing wool as will secure to each shepherd an exact recompense for his skill and care. It may be possible for the agricultural products of the country to sink still lower in value than they now are. Perhaps there is margin enough for a great depreciation in prices; but it will, sooner or later, become necessary for the manufacturer to inquire whether his interests will be promoted or prejudiced, by having the *farmers* of the United States become merely peasants. May he not so depreciate the value of wool that he will ultimately injure himself?

Until the letter of Mr. Gay, nothing has ever before been said, that I am aware of, about the necessity of sorting fleeces for market. According to Mr. Gay, wool destined to European markets must be sorted, else the fullest advantage will not be realized from the venture. Nor is it less certain, that an unnecessary loss is annually submitted to, by the neglect, or rather by the impossibility, under the present system, of doing the same thing with fleeces destined for home consumption. The necessity of sorting in the one, springs out of the division of manufacturing labour. The division of labour, it is true, is not carried as far with us as with foreigners; it nevertheless exists to a great extent—is daily becoming more perfect, and from the necessity of the case, must ultimately be as complete here as elsewhere. But even as things now are, it is not difficult to show that the sorting of fleece wool is requisite to prevent an otherwise unnecessary loss to the wool growers.

One factory that I can name, values a certain description of wool only at 35 cents per lb., because it is unsuited to their style of goods; while the very same wool is valued, in another factory, at 40 cents per lb. for the opposite reason.

Here is the evidence, in one case at least, that in this country, as in England, the manufacturer undervalues the wool brought to his factory for sale.

Again, the mousseline de laine manufacturers, in some instances, use wool of precisely the same market value with the satinet maker. But the style of the wool is different; the staple of the one being longer than that of the other.

The interest of both would be promoted by sorting wool, not only as to its quality and the condition of the fleece, but also, as to the style, and undoubtedly both would be willing to pay a trifle more per lb.—a trifle, it is true—but success often depends upon trifles.

The staplers of satinet factories and other manufacturers of coarse fabrics, frequently collect large stocks of wool, of a quality used only by the manufacturers of broadcloths. Yet for this superior wool no more has been paid by the satinet makers than for that of inferior quality, which is perfectly well adapted to his purpose. I have before me the evidence of one case,

where an advance of 20 cents per pound was obtained by a manufacturer of satinets, for wool of a quality too good for his purpose. So also, the makers of mousseline de laines purchase large quantities of wool in order to select from it only that which has sufficient length of staple to suit their purpose; the residue is disposed of to others. A company can be named, who annually use 200,000 lbs. of mousseline de laine wool, and yet buy 350,000 lbs. to select from.

Those manufacturers that require the best and the finest wool for their goods, are compelled, under the existing practice, to buy large quantities of wool unsuited to their purpose. An establishment can be named that has 150,000 lbs. of wool now on hand, thus obtained, and which they will gladly return to the farmer at cost. The Middlesex Company use annually one million pounds of wool; what then must be the amount of surplus wool purchased by them?

A Vermont manufacturer of broadcloths purchased a lot of wool in Dutchess county; among it was some wool brought from his own immediate neighbours, and which he could have purchased before it left home if it had suited his style of goods, without paying a price for it enhanced by the profits of two factors, through whose hands it had passed, and the expense of the journey to Dutchess county and back. The manufacturer must be paid for this useless employment of his capital. He is paid, even though unwittingly; he is paid by the flock-masters.

I have collected numerous facts to sustain the position I have taken, but one has recently come under my notice so conclusive, that I select it in preference to others for this purpose. A lot of wool, amounting to several thousand pounds, was put up in the manner complained of, in 1844, but was not sold till 1845, and was then sold without being sorted. The clip of the same flock for 1845 was put up as it ought to be, and was sold—but sorted; a few hundred pounds of the coarser fleeces, amounting to a tenth of the quantity put up in 1844, being separated. Both lots were cleansed by the same manufacturer, in all respects under the same circumstances, except as I have mentioned, and yet the last lot brought 10 cents per lb. more than the former. Both lots were stapled and cleansed, and the real value of each determined by the manufacturer, under circumstances which leave no doubt that the truth was fully and fairly ascertained and stated.

Those who take short-sighted views of things, may not see fully and clearly the injurious consequences of the evil here pointed out. They may say that under the present system, quite as much if not more wool is purchased by the manufacturer than would be purchased under any other system; and if one class of manufacturers accumulate large stocks of wool that they do not want, they can sell them to others who do. All this is undeniable. But the manufacturers no more desire to be wool merchants, than they desire to be wool growers, and thus acquire themselves the united profits of the farmer, the merchant, and the manufacturer.

The history of commerce shows that, with few exceptions, this jumble of different pursuits is fatal to prosperity. If the manufacturer, by the force of circumstances, is nevertheless compelled to some extent to pursue this course, he will not transfer an accumulation of, to him, useless wool, to a brother manufacturer, without a profit, and whatever that profit may be, it is so much abstracted from the profit of the wool grower.

Again: whatever retards the prosperity of the woollen factories, abates measurably the profits of the flock-master, and among the various hindrances to the growth and extension of this description of manufactures, none has been more potent in its baneful influences than the known and acknowledged fact that an enormous amount of capital is requisite to insure

success. I hope to be able to show, by and by, that it is for the interest of the wool-grower to do all in his power to lessen this evil, and bring the cotton and the woollen manufacturer more nearly to a level.

The 150,000 lbs. of wool referred to has cost that Company not less than \$52,500, a very nice sum to lay perfectly idle for more than a year. The bare mention of the fact will convince any one that this Company will readily pay more than it now does for the description of wool it actually wants, if it can be saved an outlay so enormous, and at the same time so unnecessary.

I remain yours, &c.

J. B. NORR.

[From the Lowell Journal.]

STATISTICS OF MANUFACTURES, &c.

It appears from recent statistics, compiled with great care from authentic sources, that the whole number of manufacturing corporations in this city, including the Bleachery and Machine Shop, is twelve, whose aggregate capital stock amounts to TWELVE MILLIONS, one hundred and ten thousand dollars. The whole number of mills is forty-eight, which give employment to 7644 females and 3629 males, or total number of hands employed, 11,273. The whole number of yards manufactured per week, is 1,732,827—viz.: 1,704,996 of cotton, 21,291 of woollen, 6500 carpets, and 40 rugs. The amount of cotton consumed is 559,000 pounds per week, and of wool 46,000 pounds. The number of yards printed is 380,000, and of dyed 2,015,000. The different companies use 25,100 tons of anthracite coal per annum, 36,303 bushels of charcoal, 2790 cords of wood. They also consume 70,510 gallons of sperm oil, and 35,000 of lard, 1,000,000 lbs. of starch, and 765 barrels of flour. The buildings are warmed by steam and furnace.

Other manufactures are produced in the city than those specified above, of a value of \$1,500,000, employing a capital of \$400,000, and about 1500 hands.

The average wages of females, clear of board, per week, is \$2.00; average wages of males, clear of board, per day, \$0.80; medium produce of a loom, No. 14 yarn, yards per day, 45; medium produce of a loom, No. 30 yarn, yards per day, 33; average per spindle, yards per day, 1½.

The Middlesex Company make use annually of 6,000,000 teasels, 1,716,000 lbs. fine wool, 80,000 lbs. glue, \$60,000 worth dye-stuffs, and \$17,000 worth of soap. They also own the Wamesit Carpet Mill, on the Concord river, where are consumed annually, 93,600 lbs. coarse wool, 36,400 lbs. of worsted yarn, producing 91,000 yards ingrain carpeting.

The Lowell Machine Shop, included among the above mills, can furnish machinery complete for a mill of 6000 spindles, in three months, and a mill can be built in the same time.

The several manufacturing companies have established a hospital for the convenience and comfort of persons employed by them respectively when sick, which is under the superintendence of one of the best surgeons and physicians.

There are two institutions for savings—the “Lowell” and the “City.” The “Lowell” had on deposit, in September, 1848, from 5066 depositors, \$852,280. The “City” has been in operation only since March, 1848, and had on deposit, January 1, 1849, from 258 depositors, \$27,717. The operatives in the mills are the principal depositors in the above banks.

The population of the city at this time is estimated at 35,000. Nineteen years ago it was little rising 3500.

CHEMISTRY IN ITS RELATION TO AGRICULTURE.

Of all sciences, chemistry is that which has the nearest relation to agriculture, and lends to it the greatest aid. It is a science that points out to us means by which we may add to the fertility of the ground through the medium of foreign substances applied to it; but, in the case of chemistry, as in that of all other sciences, a certain degree of caution is necessary in carrying into practice the rules laid down by the theorist, when in his laboratory. Chemistry enables us at once to test the real value of any given substance, without the uncertainty and loss of time attendant on a trial; and when it is considered how much time must have been lost, how unsatisfactory the result must repeatedly have been, when no such knowledge existed to certify the progress of discovery, the value of this science may in some measure be estimated. It is certain that the principles on which vegetables are nourished, depend altogether upon chemistry; and agriculture, in its modern and improved state, has led with considerable precision to a knowledge of those laws of vegetation by which we are enabled to ameliorate the land, and to increase the quantity as well as improve the quality of its productions. The farmer who applies a peculiar species of manure, which has been found beneficial to his ground, being himself ignorant of chemistry, only follows the practice of his predecessors or neighbours; but while he sneers at the theorist who would direct his attention to the studies of the first principles of his art, both he and those whom he follows were probably originally indebted for that practice to the observations of men of science. No one who is at all conversant with the subject of manure can be ignorant that, notwithstanding the management of intelligent husbandmen, a great want of knowledge prevails among the common run of farmers regarding the best modes of its preparation and application. I think if we were to pay a little more attention to the nature and properties of manure before we apply it to the soil, we may in that way sometimes reap great benefit. I think these things ought to be more seriously considered, not only for the benefit we may ourselves derive from it, but also the community. I know not that more cogent arguments for the union of chemistry with agriculture can be adduced than already exist in the stimulus all parties possess for advancing their individual interests; but of this we may feel assured, that as the end and object of all knowledge in connection with this subject is to increase the produce of the earth, so those who will not avail themselves of the assistance chemistry affords will be left behind in the struggle which is going on; and further, those who do rely on the science for an elucidation of the hitherto mysterious operations of Nature, will not only derive a direct and immediate benefit from the application of chemistry to agriculture, but they will also proceed with less difficulty, from being assured that the laws of Nature are uniform in their operations, and that a certain cause will always induce a certain result. Without a fair trial being given to the opinions of the one or the power of the other, the hints thrown out by the scientific are often overpowered and put down by that concentrated mass of ignorance and prejudice through which the light of science can rarely penetrate. Every year shows us more and more clearly that we must find a surer way of obtaining good crops than our forefathers; we have the foreign grower to contend with, and must now look to science, not leave it to the next generation of farmers for the aid which practice alone cannot afford us. I do not mean to say a farmer must be a professed chemist and master of analysis; on the contrary, I think it would be useless for him to trouble himself with the sixty-two elementary or simple bodies which the numberless forms of

matter, of which the crust of the globe is composed, are capable of being resolved into; but it is necessary every farmer should have a certain amount of information on scientific subjects, more especially with those that point out to him the composition of the various plants he cultivates, and of the manures he carries on his land.* Liebig says, in his excellent work on "Chemistry in its Application to Agriculture and Physiology," "Now that the conditions which render the soil productive and capable of affording support to plants are ascertained, it cannot well be denied, that from chemistry alone further progress in agriculture is to be expected."

G. S., A YOUNG FARMER.

THE LUMBER TRADE.

Maine Lumber.—The Kennebec Journal denies a rumour spread abroad, that an immense quantity of timber has been cut in the forests of Maine during the past year. It adds:

The winter has been good for lumbering operations, but the scarcity of money and the diminished demand for lumber have curtailed the work. It is believed that the amount cut will be one-third less than last year, and it is uncertain whether even this will get down to the mills, though probably there will be as much as can be sold. The demand for lumber depends mainly upon the prosperity of the manufacturers of New England. But little, comparatively, of the lumber of Maine finds a market beyond the limits of New England.

The power to consume cloth has *diminished* under the new system which was to emancipate labour and capital from the taxation of the protective system. Therewith, there has been a *diminution* in the power to consume lumber, and the farmer is no longer enabled, with profit to himself, to clear and cultivate the lands on which it grows. The power to consume coal has *diminished* as the new system has come gradually into action, and the farmer has ceased to have a demand for the spare labour of himself, his sons, his wagons, and his horses, for the service of the miners, and for the hauling of stone and lumber for building houses for those employed in working them. The power to consume iron has *diminished*, and the farmer sells no stone from his quarries for the building of furnaces. The men who worked in the furnaces and mines are flying to the West, there to become producers of food, because the farmers and planters of the country have determined to depend upon the small and uncertain market afforded by the "great grain markets of the world," instead of the immense, and then rapidly growing, and *certain* market at home. It is time that farmers and planters should open their eyes to the fact that it is population that makes land valuable, because population brings consumers to their sides—and that depopulation diminishes the value of both labour and land, because with every step in its progress, men are compelled to waste more labour and manure in the work of transportation and exchange. When they shall do so, they will arrive at the conclusion that protection is emphatically a farmer's and planter's measure, and they will then be seen uniting in the demand for the adoption of a system of policy that will permit the consumer of food to take his place by the side of the producer of food.

* Concurring in this opinion, it is for that reason that we are publishing elementary works, by means of which every farmer and every farmer's son may acquire such information. Every cultivator of the soil in the Union, who can raise "a quarter," and who has a son, or expects ever to have one, ought to hasten to buy "*The Elements of Agriculture*," which Mr. RANDALL, formerly Superintendent of the Public Schools in New York, says is decidedly the best work for its purpose, as an elementary school-book, that has ever fallen under his observation. We can send it by mail to any one, the postage being only four or five cents—or we will send it without charge to any one sending \$3 for one subscriber, \$5 for two, or \$10 for five.

IRON ORE.

Reading Iron Ore.—The iron beds in the vicinity of our city, and indeed those within our limits have, within the last year or two, received a large share of attention from those engaged in the business, and their labours seem to have met with great encouragement from the value of the ore which their excavations have discovered. On Penn's Mount, a mountain known to contain vast quantities of the ore, the most extensive and valuable veins of various kinds of iron have been discovered. For many years these rich deposits were abandoned, and the openings had been entirely neglected, either for the want of capital or the absence of a proper spirit of enterprise, until they attracted the attention of our enterprising fellow-townsmen, George W. Oakeley, Esq., who appreciated their value, and in the face of the most discouraging barriers, sufficient to retard the progress of one less determined, he went to work with his men, and by personal effort and skill, succeeded in drawing from the bowels of the mountain, ore as rich and as valuable as ever was found in the placers of the Sacramento.—*Reading (Pa.) Gazette.*

From one extremity of this country to the other, iron ore abounds, requiring only labour to give it value. Labour abounds, and men everywhere are seen wasting more time than would pay thrice over for all the iron they consume. The labourer employed in extracting the ore and converting it into iron, requires food, which so abounds that in many parts of the country the waste is more than would pay for all the iron that is consumed, and "the great grain markets of the world" are so choked with the products of Russia and Poland, Egypt and Sicily, that there exists no hope of any diminution of our great surplus: and with all this, the newspapers of the day show us that we are daily importing immense quantities of British and Russian, Polish and Sicilian, food in the form of iron.

Why is it so? Our readers will find the explanation in the paragraph given above. The preparation for making iron cheaply involves large expenditure, and all fear to engage in it, because there is, and under the existing system there can be, no certainty. Two years since, iron was high everywhere, and men were induced to build furnaces and rolling-mills. Now, it is everywhere low, and the builders of furnaces and rolling-mills are ruined. So has it been for fifty years. The system of England is unsound and unsteady, and it ruins all who are in close connection with her. Ireland, Nova Scotia, New Brunswick, Canada, and India, have iron ore in abundance, but they can never have furnaces while they continue to be subject to the laws of England. Give them freedom, and their first step will be seen to be an effort to bring the consumer of food to the side of the producer of food, and then land and labour will become valuable, and the farmer will grow rich.

Analysis of the Speech of Mr. D'Israeli.—The speech made by Mr. D'Israeli, in the House of Commons, on proposing his resolutions relative to the burdens on agriculture, was sent for analysis to the laboratory of that eminent chemist, *Mr. Punch*. It appeared as a mass of watery vapour, nearly equal in volume to a small duodecimo, but which was reduced by condensation into a much smaller space. On applying the test of Mr. Joseph Hume, there was thrown down a large precipitate of imaginary facts and figures. There remained in solution a tissue of misrepresentations, combined with a great amount of clap-trap and a considerable portion of fatty matter, that on examination proved to be gammon; from which substances the liquid was separated by distillation. The product which came over was chiefly aqueous; containing, however, traces of spirit, and a minute quantity of essential principle—which consisted in easing the landlords of taxation at the expense of the community, and leaving the much-enduring tenant farmers worse off than they are.—*Punch.*

[Entered according to Act of Congress, in the year 1849, by JOHN S. SKINNER & SON, in the Clerk's Office of the District Court of the Eastern District of Pennsylvania.]

THE AGRICULTURAL SCHOOL-BOOK.

THE TRUE GRASSES, OR GRAMINEÆ.

BY DR. DARLINGTON.

THE following may be said to be based upon and made up of an "ESSAY ON THE TRUE GRASSES," by DR. DARLINGTON, of West Chester, Pa., thrown here into catechetical form, for the better use of schools, corresponding, in that respect, with the foregoing "*Catechism of Agricultural Chemistry*."

This is one among many of the obligations conferred on the public, in this way, by a gentleman whose pursuit of knowledge is evidently prompted by the twofold motive of love of knowledge for its own sake, and for the uses to which it may be applied for the benefit of his fellow-men. We are happy in the opportunity of paying even this public tribute to his eminent worth and abilities.

It is evident that these lessons can be rendered much more practical and interesting if the teacher will take the trouble to illustrate them by exhibiting specimens of the grasses and grains described. There are many questions, too, independent of those at the end of each lesson, that should be put by the teacher, in order to assure himself that the subject is thoroughly understood.—*Editors P. L. & A.*

FIRST LESSON.

1. The term grass is generally used in a vague sense, to designate every kind of herbage found in our meadows and pastures: hence, we often hear people speak of clover, lucerne, and other plants, which have no botanical affinity whatever with the true grasses, as though they really belonged to that important tribe of vegetables. But such is not the language of naturalists; and ought not to be of any well-informed person. An accurate knowledge of objects can neither be acquired nor communicated without precision in the use of terms.

2. Whenever we meet with a plant having a round, jointed stem, with the joints solid and the intervening portions hollow—or, in a few instances, filled with a pith-like substance—the leaves alternate, one originating at each joint, embracing the stems with its base, and forming a sheath which is slit on one side down to its origin, and the flowers protected by those peculiar envelopes, known by the name of chaff, we may take it for granted we have before us a true grass. Brief and simple as is this definition, it will be found to contain the most obvious characteristics of the tribe, sufficient to distinguish it from all others.

3. The cuticle or skin of the grasses (for they have no bark, properly so called) contains a considerable portion of *silex*—as is shown by its vitrification, when stacks, or other dense masses of unthreshed grain are burnt. A sort of glass is produced from this silex, which preserves the form of the plant, even to its minutest parts.

4. The nerves or *veins* in the leaves of this family are all nearly parallel—in consequence of which those appendages (*i. e.* the leaves) are entire, generally narrow, elongated, and more or less linear in their form.

5. The flowers are mostly small, disposed in little clusters or spikelets, and these spikelets are variously arranged, in spikes, racemes, or loose panicles. Each spikelet—consisting sometimes of one, but more commonly of two, three, or many florets—is usually embraced, or supported at the base,

by two chaffy pieces, called glumes; and each *floret* is immediately protected by two somewhat similar chaffy coverings, which, for the sake of distinction, are denominated *paleæ*. These chaffy coverings of the flowers and seeds of the grasses are wholly unlike the delicate and showy floral envelopes of most other plants—and seem to be, in fact, the mere stunted vestiges of abortive leaves—or rather of their sheaths—closely crowded together. Hence we find them, like the leaves, constantly alternate: for, although approximated in pairs, they are never exactly opposite, or originating in the same place, as we see to be the case with the sepals and petals of other tribes. The number of stamens* is usually *three*—rarely *six*, or some multiple of three—and occasionally, from abortion, some intermediate, or smaller number.

6. Each fertile flower produces a *single seed*, the chief bulk of which is called albumen, and is that nutritious portion of our cultivated grains from which the miller prepares *flour*. The *embryo*, or living rudiment of the future plant, is comparatively a mere speck, or minute point in the seeds of the grasses—snugly situated, on the outer side, near the base of the albumen, where it lies dormant, until the concurring causes of vegetation (namely, warmth, moisture, and oxygen) excite it into active life. This embryo—which is in fact an entire plant in miniature—may be distinctly and satisfactorily observed in a grain of wheat or Indian corn—especially at the moment of sprouting or incipient growth—when it will be found that the principal mass of the grain consists of the apparently inorganic matter already mentioned by the name of albumen.

7. Having thus hastily glanced at some of the more striking features of the extensive tribe, technically called *grasses*, and the characters by which they are distinguished from other plants, it is hoped that the student will have no difficulty hereafter in recognising any member of that family. He knows, indeed, that “red-top,” “timothy,” and “fox-tail” are *grasses*, and he may perhaps be aware that our cultivated oats, barley, wheat, and rye, and even rice, belong to the same category. But the fact may not be equally familiar to every one that our Indian corn and broom-corn, the sugarcane and the bamboo, are also *genuine and true grasses*. Much as these last-mentioned plants may seem to differ from the multitude of common grasses, the disciplined eye of the botanist perceives at a glance that they all belong to the same family; and indeed so eminently *natural* is the whole tribe—*i. e.* so strong is the general resemblance in the characters and habits of its members—that superficial observers, finding it so much easier to adopt than to verify the crude notions of the vulgar, have actually supposed several species to be continually and reciprocally changing into each other! It is to be hoped, however, that our ingenious youths will yet learn to discriminate between truth and error, in the objects around them, and not be content “to wander among the productions of nature with little more perception or enjoyment of her charms than a cow on a common, or a goose on a green.”

QUESTIONS.

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| 1. Is the term grass often misapplied? | 5. Describe the flowers. |
| 2. How are the true grasses recognised? | 6. What is the chief bulk of the seeds composed of? |
| 3. Does the skin of the grasses contain much silex? | 7. Do the different species of grass change from one kind to another? |
| 4. Describe the leaves. | |

* *Note*.—The teacher will here explain what the stamens are.

SECOND LESSON.

THE TRUE GRASSES. (*Continued.*)

1. The whole number of flowering plants already known to the botanists has been estimated at forty thousand species, of which it is supposed the grasses constitute one-twentieth part; but if we take into account the immense number of individuals of many species, the proportion of grasses to vegetation in general will be greatly increased.

2. The known grasses of the Middle and Northern States, native, naturalized, and cultivated, amount to near one hundred species, or *one-tenth* of the whole number of flowering plants inhabiting the same territory. A large portion, indeed, of this vast family is not known to possess any properties which man has yet been able to convert to his own immediate advantage; but it becomes us to be cautious how we decide upon the value of objects from the imperfect views of their *utility* afforded by our limited knowledge. Many created beings which appear to us as nuisances may be important agents for good in the economy of nature. The most worthless grasses—or the veriest *weeds* that annoy the husbandman—*may* be the instruments of a wise Providence for collecting fertilizing principles from every falling shower, or passing breeze, and imparting them in turn to the soil on which they are finally decomposed.

3. With respect to *locality* or peculiar places of growth affected by this numerous tribe, there is but little to remark. We find grasses growing on dry land and in water; but none that are properly *marine* plants. They occur in every kind of soil, both in society with others, and alone; sometimes occupying considerable districts, to the almost entire exclusion of other forms of vegetation, and thus forming the beautiful *turf*, so much admired in lawns and meadows. *Sand* appears to be less favourable to their growth; but even this produces species which seem almost peculiar to itself.

4. The *diffusion* of this family has almost no other limits than those of the whole vegetable kingdom. Grasses occur under the equator, and are among the few plants to be met with in the frozen regions of Spitzbergen. On the mountains of the south of Europe, and on the Andes, in our own hemisphere, they ascend almost to the line of perpetual snow.

5. The most striking differences between tropical and extra-tropical grasses are the following:

1st. The *tropical* grasses acquire a much greater *height*, and occasionally assume the appearance of trees. Some species of bamboo are from fifty to sixty feet high.

2d. The leaves of the tropical grasses are broader and approach more in form to those of other families of plants.

3d. The *flowers* in tropical grasses are more frequently imperfect or *diclinous*—*i. e.* the stamens and pistils are oftener found in distinct and separate envelopes: they are also usually softer, more downy and elegant—as may be seen in the sugar-cane, and others.

6. In respect to the predominating kinds of grain or grasses, the earth may be divided into *five* grand belts or kingdoms. Beginning at the South, rice predominates; then maize, or Indian corn; then wheat; then rye; and lastly, barley and oats. Maize, or Indian corn, has the greatest range of temperature; but rice may be said to support the greatest number of the human race.

7. With reference to the properties and uses of this comparatively humble tribe of plants, it may be observed that it probably contributes, directly and indirectly, more largely to the sustenance and comfort of the human family

than any if not all of the other groups of the vegetable creation. Those numerous species which are regarded as mere weeds—which even the browsing herds neglect and trample under foot—may yet, as has been intimated, be operative in gradually fertilizing the soil. Some have been found of great value, simply in fixing and keeping together the blowing sands of the sea-coast, and the loose earth of railroad and canal embankments, by their creeping suckers and tough entangled roots. Among these, the *Arundo arenaria* (L.) and the *Cynodon dactylon* (Pers.) are the most remarkable. The culms or stems of the grasses have been put in requisition for various economical and even ornamental purposes. The branches of the panicle at the summit of our well-known broom-corn, are manufactured into brooms. The culms of rye afford a good material for roof, and are much employed in some parts of the country in thatching barns, out-houses, and stacks. The Chinese manufacture a delicate paper from the rice-plant; and in our own country a coarse but very useful paper is made of oat-straw and even corn-husks. In the country of the bamboo, the culms of that stately grass furnish spars for the equipment of sail-boats, and materials for the manufacture of furniture. Large quantities of paper are also made in China from the bamboo. The well-known Leghorn bonnets, so highly prized by the ladies, are manufactured from the straw of a delicate kind of wheat; and in our own country many beautiful imitations of Leghorn hats and bonnets have been made from the slender culms of the grasses—particularly the meadow or green grass—*Poa pratensis*, (L.)

QUESTIONS.

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| <ol style="list-style-type: none"> 1. What is the estimated number of flowering plants known to botanists, and what proportion of them belongs to the grasses? 2. What is the number of grasses in the Middle and Northern States? 3. What of the locality of the grasses? 4. Are the grasses found diffused throughout the globe? | <ol style="list-style-type: none"> 5. What are the most striking differences between the tropical and extra-tropical grasses? 6. In respect to the predominating kinds of grass, how may the world be divided? 7. What of the properties and uses of the grasses? |
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THIRD LESSON.

THE TRUE GRASSES. (Continued.)

1. In an *agricultural* point of view, the superior value of the grasses, as materials for pasture and hay, is owing to the large quantity of saccharine matter with which they abound about the time of flowering, and which is the source of that rich, sweet odour observable in well-preserved hay.

2. This saccharine matter which pervades the whole plant before flowering, and is most perfectly elaborated at that epoch, is designed to be ultimately concentrated and deposited in the seeds, chiefly in the form of *farina*; and hence we find the herbage comparatively of little value after the fruit is fully matured. The skillful agriculturist, therefore, when he wishes to have good *hay*, cuts the grass at the moment when the nutritious juices are most perfect, and while they are diffused throughout the plant. But when his main object is the *seed*—as in our cultivated grains—he of course postpones his harvest until the career of vegetation is finished.

3. It is needless to enlarge on the importance of the herbage of the grasses in supplying the food of our domestic animals, and indirectly the animal portion of our own food. We will, however, mention those species which are deemed of chief value in our meadows and pastures, naming them in what is considered the order of their excellence. 1. The meadow or green grass, erroneously called blue grass, in Kentucky, (*Poa pratensis*,

L.) 2. Timothy, or the "herd's grass" of the Northern States, (*Phleum pratense*.) 3. Orchard-grass, (*Dactylis glomerata*, L.) 4. Meadow fescue (*Festuca pratensis*, L.) 5. Blue-grass, (*Poa compressa*, L.) 6. Ray-grass, (*Lolium perenne*, L.) 7. Herd's grass of Pennsylvania, often called "red-top," the "bent grass" of the English, (*Agrostis vulgaris*, L.) And, 8. Sweet-scented vernal grass, (*Anthoxanthum odoratum*, L.) There are a few other grasses, native or partially naturalized, to be found on our farms, and which are more or less eaten by cattle when the better ones are wanting, but they are of comparatively little value, and good farmers are always desirous to supersede them as soon as possible, by some of those above-named.

4. It is remarkable that all the grasses here enumerated are believed to have been introduced into our country. They are all more or less extensively naturalized; but some of them require to be regularly sown to produce a full crop—and are therefore known as artificial grasses. Those generally cultivated here are the timothy and orchard-grass—and occasionally we see the ray and herd's grass, or red-top—though these last are not so much esteemed. The others are completely naturalized; and when the soil is either originally fertile, or adequately improved, the best of them—viz.: the meadow-grass and the fescue—soon appear spontaneously in our pastures, and supersede the artificial ones. Now and then we hear of attempts to introduce new grasses to the notice of our agriculturists—accompanied by exaggerated statements of their value—such as the taller oat-grass, (*Avena elatior*, L.) and sometimes called "grass of the Andes:" and a few years since, one of our coarse indigenous grasses, called "Sesame," or "gama grass," (*Tripsacum dactyloides*.) was so extravagantly lauded in the journals, that many lovers of novelties were induced to try the experiment of cultivating it, in place of the old approved plants, but the experiment resulted in a total failure. It is indeed exceedingly doubtful whether any other grasses are so well adapted to our climate and our wants as those old and long tried acquaintances of our farmers, which have been enumerated.

5. We have thus endeavoured to give some idea of the uses to which the roots, stems, and general herbage of the grasses are or may be appropriated, in the arts, in domestic and rural economy; but it is from the seeds of the grass tribe—with one exception—that we derive the most eminent and immediate advantages. To them we are indebted for what has been emphatically called "the staff of life." The chief bulk of those seeds being made up of farinaceous matter—which, as has been stated, is always innocent and nutritious—they are consequently well adapted to the sustenance of man. They not only supply us with bread, but with all the countless variety of dishes which ingenuity has prepared, both from the flour, and the unground grain; and if but few species are commonly employed for that purpose, it is because the large size of their seeds, compared with other grasses, renders them more eligible as objects of culture. There is but a solitary instance alleged of the unwholesomeness of the seeds in the entire family of the grasses—viz.: those of the darnel, (*Lolium temulentum*.) a common weed in many parts of Europe, but scarcely known in the United States: and even in this case the deleterious effects are probably much exaggerated. It is only when the seeds are damaged or diseased that they become injurious to health—as, when putrefaction has commenced—or when that peculiar disease and enlargement of the grain occurs, which is known by the name of *Ergot*.

6. This kind of diseased grain, (the effect, it is believed, of a parasitic fungus,) has been found to exert a powerful influence on the animal system; and hence, instead of being a nutriment, it may become either a

poison or a *medicine*, according to the quantity taken or the manner in which it is employed. It is true that human ingenuity has extracted a potent medical agent, in the form of alcohol, from the fermented seeds and juices of the gramineæ—and it is equally true, that man has converted that *extreme medium* into his daily beverage; but this is only a signal instance of his depravity, in perverting the blessings bestowed upon him, and argues nothing against the intrinsic value of the materials abused. It merely illustrates the ancient truth: “*corruptio optimi pessima*,”—that the prostitution of the best things produces the vilest results.

7. In some regions, where our common cultivated grains do not succeed well, either from the character of the climate or the inhabitants, other grasses are employed as substitutes. The seeds of a late aquatic grass, (*Glyceria luitans*,)—which grows spontaneously here as well as in the old world—are used in the north of Europe, as an article of food, under the name of manna seeds, or *manne de Prusse*. In some parts of Asia, Africa, and Europe, food is prepared from the seeds of the several grasses which comprise the different kinds of millet, and a few others; but they are all inferior in value to the poorest of the *cereals* or cultivated grains. The plant called “millet” in this country, (*Setaria germanica*), is valued chiefly for its herbage; and even that does not seem to command the attention of many farmers. The true millet—unknown in our agriculture—is believed to be a species of panicum; but there are other kinds nearly allied to our broom-corn, known by the names of Indian millet, Guinea corn, chocolate corn, &c. These have been cultivated here occasionally, but rather as articles of curiosity than of agricultural importance. Our common broom-corn (*Sorghum saccharatum*) is cultivated here exclusively for the uses indicated by its popular name, as already noticed; though the stem contains much saccharine matter, and it is sometimes raised in Italy for the purpose of making sugar.

QUESTIONS.

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| 1. To what is the agricultural value of grass to be chiefly attributed?
2. What is said of the saccharine matter with reference to cutting hay?
3. Name the more valuable grasses.
4. What is remarked of these grasses? | 5. What is said of the seeds of the grasses and their uses?
6. What is ergot?
7. Are any other than the cultivated grains ever used for food? |
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FOURTH LESSON.

THE TRUE GRASSES. (*Continued*.)

1. The least valuable, perhaps, of our cereals—or those grasses which are cultivated here for the sake of their seeds—is the common *oats* (*Avena sativa*.) This grain is lighter and less perfect with us than it is in the north of Europe, and it is almost entirely appropriated here to the feeding of domestic animals; but in less favoured climes—as already remarked—it contributes largely and directly to the sustenance of man.

2. Ascending in the scale of value, we next find barley, (*Hordeum vulgare*,) a grain which in some regions is extensively used for *bread*, and more or less as food for horses, and other stock; but in our own country, it is almost exclusively employed in the manufacture of a rich potation known to us all by the names of beer, ale, and porter. The entire crops produced in the Middle and Northern States are destined for the *breweries*—a comparatively small portion being used in the distilleries.

3. The grain next superior in importance—being used to a considerable extent in making bread—is rye, (*Secale cereale*.) In most parts of the

country, from the force of custom or prejudice, and the greater abundance of wheat, we are in the habit of undervaluing the bread made from this grain; but in many districts, where the soil is better adapted to the plant, rye is very generally used and highly esteemed. It is also employed to a most mischievous extent in the production of the ardent spirit called *whisky*. So great is the amount of ardent spirit procured from this grain, and so tremendous the abuse resulting from the practice, that it may be doubted on the whole whether *rye* does not contribute more largely to the destruction than to the sustenance of human life. Certain it is, that by the conversion of its wholesome farina into an intoxicating draught, it is made a potent instrument of physical and moral evil—a most prolific source of disease, misery, and crime. All these mischiefs, however, arise from the misapplication and abuse of a positive good, for which man himself must be held accountable, and must expect the penalties inseparable from folly and wickedness.

4. The next most valuable plant among the *cereals* is perhaps our Indian corn, (*Zea mays*), and, indeed, in the districts most favourable to its culture, it may be said to rival wheat itself in importance. Those who are not in the habit of regarding the vegetable kingdom with a botanical eye, may possibly be surprised to hear this plant enumerated among the *grasses*: yet, if they will advert to the definition already given, they will find the Indian corn to be a genuine member of the gramineous tribe. It presents, indeed, one of the few instances in which the stem is solid with pith, instead of being hollow between the joints; but in every essential feature it will be found on examination to be a true and undoubted *grass*. The same remark applies to the broom-corn, the sugar-cane, and some others in which the culm is filled with pith. In our country, it would be wholly superfluous to dwell on the excellence and manifold uses of this universal favourite. Suffice it to say that while it is the most productive of our cultivated grains, every portion of the plant has its value in rural and domestic economy. The large pithy culm, about the time of flowering, is replete with a rich saccharine juice, from which no doubt a considerable quantity of sugar might be extracted. The entire herbage is therefore highly esteemed as a nutritious food for cattle. The *ears* or spikes of fruit afford a choice treat to the epicure, even before they arrive at maturity, and when fully ripe, yield copious nourishment in many forms, both for man and beast, while the very *receptacles* of the seeds—long considered as mere refuse—may be either ground with the grain as food for stock, or reserved as a convenient auxiliary fuel in lighting up coal fires. In the north generally the farina of Indian-corn is not extensively used by itself in making *bread*, probably for want of skill and usage; but on the southern side of Mason and Dixon's line, corn-bread is admirably prepared, and quite as popular as any other kind. The inhabitants of the West Indies also derive a large portion of their subsistence from our crops of Indian corn. It must be added, moreover, that a vast amount of this grain, in conjunction with rye, is converted by the distilleries into alcoholic poison, and its wholesome properties transmuted into the pestilent ministers of a depraved appetite.

QUESTIONS.

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| 1. What is said of the common oat? | | 4. What is said of Indian corn and its various uses? |
| 2. What of barley? | | |
| 3. What of rye and its uses? | | |

FIFTH LESSON.

THE TRUE GRASSES. (*Continued.*)

1. There are two other grain-bearing grasses yet to be noticed, each of which is so eminently valuable to the human race, that it is not easy to say which is entitled to the highest position in the scale of importance. We refer to wheat (*Triticum sativum*) and rice (*Oryza sativa*.) In point of *intrinsic* value, there is no doubt that wheat may justly claim the precedence; but as rice is believed to afford sustenance to a larger portion of the human family than any other grain, we may allow it on this occasion to take rank as the first among the cereals, and therefore, according to our arrangement of the subject, the last to be treated of. Wheat, however, is clearly the most important of the grains in the temperate zones—especially in the higher latitudes. The Romans gave the name of *frumentum* to all the grains which furnish bread, and in England the same grains are designated by the name of *corn*; but these names were gradually, and by way of eminence, applied more particularly to wheat, as the great staple of bread-stuffs. So the term *froment* is employed by the French in a similar sense. Our colonial ancestors brought with them the English term *corn* as applicable to the European grains, and for the sake of distinction, they gave to the *maize* which they found here, the name of *Indian corn*. In process of time, however, as the other grains had each a proper name, the generic term of *corn* has come to be almost exclusively employed in the United States to designate the maize: and thus the word, like many others in our language, has, by usage, acquired a somewhat different meaning on different sides of the Atlantic.

2. We shall not enlarge on a subject so familiar to all as the value and importance of wheat. We are all aware that in the greater portion of our happy country—especially in the Western and Middle States—it is one of the prominent objects of our agriculture. So long, therefore, as our people shall apply themselves to the tillage of the soil, we may reasonably hope to be exempted from that fearful calamity, a want of bread. In addition to the supply of food furnished by wheat, it is largely and variously used in manufactures. Although capable of yielding alcohol like all other farinaceous seeds, wheat is generally too valuable an article of food to be desecrated by the process of distillation.

3. In our notice of the *cereals*, the last in order—and as is supposed, the first in importance, by reason of its extensive use—is the rice plant, (*Oryza sativa*.) The beautiful grain which this grass affords—though considered by us, here, more as a delicacy than a standing dish—is the principal sustenance of millions of the human race. Being a kind of semi-aquatic plant, rice flourishes best in grounds that are low and marshy, or so situated that they can be overflowed, though there is a variety called upland, or mountain rice, which is much cultivated: and everywhere within the tropical and adjacent regions, where circumstances are favourable to its culture, this admirable grass is to be found. In the southern portions of India, and in China, a dense population is almost exclusively subsisted upon rice. The tables of the wealthy in the East are crowded with elegant preparations of this grain. This plant belongs to a small subdivision of the grass tribe in which the flowers are often furnished with the extraordinary number of *six stamens*, or possibly they may each consist of two florets, concentrated within the proper envelopes of a single flower, by which crowding process all the parts of one of the florets except the stamens may be suppressed, or abortive; a phenomenon of which it is believed there are many analogous instances in the economy of vegetation. The seeds are closely invested by

the inner chaffy envelope or paleæ, after the manner of oats and barley, and while thus coated are known in the East by the name of padda. They are deprived of this covering by passing them between mill-stones, properly adjusted for the purpose, and are thus prepared for the culinary department much in the same way that *hulled* and *pearl barley* are manufactured. The *albumen*, or farinaceous portion of rice, is of a remarkably pure white—almost translucent; and of a very bland, nutritious quality. The gluten which it contains enables the Chinese to manufacture from it various ornamental articles of great beauty and delicacy. This gluten is also said to be an important ingredient in the preparation of *Japan paper*. The art of extracting alcohol from the seeds has been applied to rice as well as to the other cereals. The fiery liquor called *arrac*—the generic name in the East for alcohol—is obtained by distillation from rice, in conjunction with sugar, or the juice of some species of the palm, and in China an amber-coloured wine is also made from that grain.

4. The last member of the gramineous tribe which remains to be noticed on this occasion, is the sugar-cane, (*Saccharum officinarum*.) This interesting plant more nearly resembles the Indian corn in its structure and general habit, than any of the other grain-bearing grasses; but, unlike them all, its value consists not in its seeds, but in the rich saccharine juice contained in its pithy stem. It is found only in warm climates, and flourishes best in the deep, rich soils within the tropics, or in the lower latitudes of the temperate zones. It is propagated by cuttings of the jointed stem, planted in rows, somewhat after the manner of Indian corn. The diameter of the culm does not much exceed that of good specimens of maize, while it varies in height from eight or ten to twenty feet, according to the character of the soil. As it is not cultivated for its seeds, it is of course rarely permitted to flower; but is gathered while the rich juices are yet diffused throughout the stem. When these juices have acquired the proper degree of maturity, the culms are crushed between rollers, the saccharine liquid is expressed, and conveyed into boilers for the purpose of driving off by evaporation the redundant watery portion. This being done to the proper extent, and the impurities duly removed, the sugar is precipitated in crystals, leaving a dark, rich syrup above, which is familiarly known to all by the name of molasses. Thus we are furnished by this magnificent grass with the purest, most nutritious, and universally palatable of all the ingredients that enter into the composition of our food.

5. From the sketch here presented, superficial as it is, we may conclude that the simple tribe of plants technically called *grasses* is not only one of the most abundant, but decidedly the most valuable and important to man of all the many natural families in the vegetable creation. That while its peculiar characters cannot fail to interest the lover of natural science, its uses, abuses, and manifold relations to the welfare of society must ever give it a strong claim to the attention of the agriculturist, the philanthropist, and the political economist.

QUESTIONS.

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| <p>1. What is the botanical name of wheat, and what is said of the relative value of wheat and rice?</p> <p>2. Is wheat used for other purposes than food?</p> <p>3. What is the botanical name of rice? How many varieties? What is there peculiar about its flowers? By what name is rice known to commerce before it is hulled?</p> | <p>What is said of the albumen and gluten of rice? What is <i>arrac</i>?</p> <p>4. Give the botanical name of the sugar-cane. In what does its value consist? Where does it flourish best? How is it propagated? When is it gathered? How are sugar and molasses made from it?</p> <p>5. What is said of the relative value of the grasses and other plants?</p> |
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WASHING WOOL IN GERMANY.

GERMAN wool is usually quoted as the standard for cleanness, as well as fineness. And our manufacturers have imported wool from thence at high rates, for the purpose of making fine premium cloths. It will not be amiss to give some idea of the pains taken in some of the best districts, to wash the wool before shearing. It is taken from a very valuable paper on German Agriculture in the last Patent-office Report :

Washing Sheep at Alerúth, in Hungary.—The process of washing is done under the roof, and, accordingly, no sudden showers or rainy weather can interfere with it. Before the shower-bath is administered to the sheep, their dirt and pitch has to be dissolved or loosened. For this purpose a soaking vat is put up, which is covered and tightly put together of strong planks or boards. It is filled with hot water, equal to eighty-four degrees Fahrenheit, the sheep are then placed in two lines and constantly handled until the yolk and dirt are dissolved, which ordinarily takes from fifteen to twenty minutes. The solvent effects of the hot water is increased by adding a few pounds of potash, and also by the lye arising from the natural oily matter of the wool. The sheep, after being well soaked, are placed under shelter, where they have to wait for their turn of the shower-bath, in order that the animal, now too much heated, may not pass immediately from the hot soaking vat into the shower-bath, this being from sixty-one to sixty-three degrees Fah. The water is let upon the sheep through a hose, with a strainer upon the end. It falls with considerable velocity, and is brought to bear upon all parts of the sheep until the wool is of a snowy whiteness. The sheep are then driven to a warm, dry shelter, and shorn as soon as the wool is dry, generally about the sixth day. On an average, forty sheep are thus washed in an hour."

CHARCOAL A DISINFECTOR OF MANURE.

LAST autumn I put into a wine bottle a few spoonsful of guano, brought from the coast of Patagonia, and filled it up with water, intending afterwards to dilute the liquid contents and use it for plants in pots. A few days ago, finding about two-thirds of the contents remaining in the bottle, I drew the cork, when a most insufferable stench was emitted. I was at the time engaged in breaking up some common charcoal, to mix with some earth for potting plants in, when the thought struck me that to pound some and put into the bottle with the guano, might improve the charcoal, and make it more useful in the purpose for which I intended it. I accordingly bruised about as much as would have filled a half pint, and added it to the liquid and guano, thus filling up the bottle. A few days afterwards, wishing to use some of this preparation, I uncorked the bottle, when, to my surprise, not the slightest smell was to be discovered, even with the nose close to the opening of the bottle. Several persons who had on the first opening cried out against the offensive contents of the bottle, now, by my desire, tried it, and could find no offensive, or indeed scarcely any scent whatever. In reference to the guano, which was given to me by the captain who discovered the bed from which it was taken, I would mention that he, at the same time, gave me nearly a small phial full of crystalized ammonia, (having something the appearance of dirty white sugar-candy; it had a strong smell, resembling in some degree that of sal volatile,) and he said that it was found deep in the guano bed, in layers of several inches thick; adding that the effect of the guano digging upon the sailors was such, that they required and insisted upon double allowance of provisions.

J. T.

WADEBRIDGE FARMERS' CLUB.

To the Editor of "The West Briton :"

SIR :—At the annual dinner of "The Wadebridge Farmers' Club," some of the members recommended a system of farming as being superior to most others, but did not show how that system could be carried out; allow me, through your columns, as a young farmer desirous of gaining information, to make a few remarks, and ask a few questions with respect to the system recommended, viz. : that all wheat arishes be put into turnips, such turnips to be eaten by the store cattle, "it not being profitable," as one of the members said, "to feed bullocks in the winter."

Now, I would ask that gentleman how it is possible to keep a sufficient number of store cattle on a farm to consume profitably the turnips grown on the fifth part of the estate.

We will take, for example, a farm of superior quality, say 185 statute acres, worth about 35s. (\$8.40) per acre rent, which will, by good management, winter about 55 bullocks of every description, and about 140 sheep. We till 37 acres of wheat, and consequently 37 acres of turnips will follow per year; 15 tons per acre being a fair average crop, we have 555 tons of turnips to be consumed.

Now, I find, if we allow 60 lbs. of turnips per day for every head of cattle on the farm, both great and small, each will have a sufficient supply, and if you give much more than that quantity, they will not eat the straw necessary to be eaten. One acre will therefore last three head of cattle the winter, and 18½ acres will be ample for the whole number; 4½ acres will be enough for the sheep, allowing them the third part of their whole living to be turnips; one acre more will be quite enough for the horses, pigs, house, and general purposes, which gives us 24 acres. What, then, is to be done with the remaining 13 acres?

The number of cattle I have given will consume all the straw grown on the farm, supposing you grow about 3000 lbs. of wheat, and 2000 lbs. of barley-straw per acre, one-sixth of the wheat-straw to be converted into reed for general purposes on the farm, the whole of the remainder to be consumed by the cattle, and used as litter; and there must be great care used to make this last the whole of the cattle through the winter. And in order to keep the horses necessary to do the work, and the number of bullocks and sheep I have named on this number of acres, the soiling system, together with rape and vetch-growing, must be carried on to some extent, or the stock cannot be kept in proper condition on the farm. I should therefore be glad to know of the gentlemen who recommend such a system of cropping, how it is to be carried out, and also, if carried out, how the farmer is to be remunerated for his outlay. A crop of turnips will cost about £7 5s. per acre—viz. : preparation, artificial manure, seed, and hoeing, £4; rent, 35s.; drawing and carting to the farm-yard, at least, on an average, 30s. per acre; and if the farm-yard is at one end of the farm, as too many are, or if the farm is a *hilly one*, this cost will be *greatly enhanced*. How is the farmer to make the turnip crop pay? It cannot be by ploughing turnips down for manure, nor by carting twenty or thirty loads into a field at once, to be there eaten, trodden down, and destroyed by a few bullocks and sheep. And I myself doubt whether it will pay to give to cattle even the allowance that I have named.

A YOUNG FARMER.

Is the reader at a loss to know why we give the above? We answer, has he no curiosity to know the cost of manure—the rent of land—the common produce per acre.

and the consumption per head, of straw, turnips, &c., in a country where, above all known to us, agriculture is most advanced? We edit a paper which is intended to serve, in some measure, the uses of travelling, to those who cannot leave home, and to impart to the reader that greatest of all pleasures, the pleasure of learning what is new or useful, even though it may not result immediately in *gold dust*!

Let him, in reading the above, put down the pound sterling at \$5, and the shilling at 24 cents—or thereabouts.

For the same reason we give the following extract from a late speech in Parliament, to show the burdens on landed property in England:

A. has an entailed estate, valued at a clear rental of £5000 a year, tithe free, and exclusive of the mansion. This estate is directly charged as follows:

Poor, county, and church rates, at 3s. in the pound	£750
Land tax	179
As income tax upon an actual rental of \$4600	138
As tenants' property tax upon farms above £300 a year, on £3200	96
	£1163
House in London assessed for rates at 3s. in the pound on £400	60
Total	£1223

B. receives £5000 a year clear from the funds or annuities. He pays in direct taxes as follows:

For house in London, rated on a 3s. in the pound rate, on an assessment of £400	£ 60
Income tax on £5000 per annum	250
Total	£310

(Hear, hear.) In a word, A., in consequence of being in possession of land, is taxed to the amount of £1223; B., a fund-holder of the same income, is taxed to the extent of £310. Does this correspond with the idea of fairness and equality entertained by the honourable member for Montrose? (Hear.) The Chancellor of the Exchequer, in the first part of his statement, said he did not lay claim to the title of practical farmer; and the subsequent portion of his speech made me rather feel that he had not over-stated his deficiencies upon this head, (a laugh.) The right honourable gentleman would not speak so charmingly of the state and prospects of agriculture if he were practically acquainted with its condition. Why, sir, the farmers are positively unable to find a market, either in London or the country, for their wheat and stock. I was informed, not many days ago, by a farmer in Sussex, that the wheat grown there this year was of good condition and quality; this man sent his wheat for sale to the market of Lewes, and it was not merely that he could not get a moderate price, or even a low price for it, but he could get no price whatever for it, (ironical cheering from the free-trade benches.) Well, but I know that to be a fact, and I repeat that no price could be had for the wheat—it was a drug in the market. The right honourable gentleman the Chancellor of the Exchequer and the noble lord at the head of the government differ very materially in their view upon the question of the burdens on land.

To Preserve Clothes.—As clothes, when laid up for a time, acquire an unpleasant odour, which requires considerable exposure to the atmospheric air to remove, it can be prevented by laying lumps of recently made charcoal between the folds of garments: and even when the odour is already fixed, the charcoal will absorb it.

PERMANENCY—WHAT PREVENTS IT?

FROM one of our free trade papers we take the following, which we commend to the consideration of our agricultural readers :

"Permanency is above all things necessary to the producer. But the foreign market is so unsteady that no reliance can be placed upon it from year to year.

"In 1838 we exported 1,319,000 bushels of wheat; in 1839, 4,670,000 bushels; and in 1840, 11,196,000 bushels; in 1845, the export fell to 6,365,500 bushels; in 1846, it rose to 13,060,000 bushels; in 1847, it went up to 26,292,000 bushels; and last year, 1848, it came down to 12,561,000 bushels, a falling off of more than one-half in a single year."

Let the farmer compare this with the course of things at home. In 1842, we made less than 400,000 tons of iron. In 1847, under the "benign influence" (to use the words of the late Secretary of the Treasury) of the tariff of 1842, the farmers and planters found among the iron-makers a market for their products, to the extent of the value of 800,000 tons. In 1844, we consumed about 300,000 bales of cotton. In 1847, the planter found a market for 600,000 bales, and the farmer for all the food required for feeding the men who built the mills, and made the machinery, and converted the cotton into cloth. In the same period, the woollen manufacture grew from twenty to forty millions, giving the farmer a market for more of his products than was afforded by all the "great grain markets of the world" in 1848. Let the farmers and planters examine the facts for themselves, and see whether permanency is to be found in depending upon all the other countries of the world for a market for products that *must* be sold, whatever be the price—or in making a market at home by the pursuance of a system that will enable the converters of wool, and cotton, and iron ore, into cloth and iron, to remain by their sides, consuming food and cotton, instead of flying to the West, there to become producers of food and cotton.

 THE LANDED INTEREST.

York Farmers' Club.—At the last monthly meeting of this club, Mr. Smallwood, of Middlethorp, in the chair, a paper was read by Mr. Raines, 'On the best plan for preparing land for spring crops.' The plan recommended was—first, to make the land dry by thoroughly draining; secondly, to grow as many root or fallow crops as grain; thirdly, to clear the land by scarifying or broad-shearing the stubble immediately after harvest; fourthly, to plough the land in sufficient time to get tempered by the atmosphere; fifthly, to plough deep for the bean and root crops; and, sixthly, to manure sufficiently for them, so as not to have to apply any to the grain crops.

Dunmow Farmers' Club.—The members of this Society have lately shown an earnestness and activity in the endeavour to obtain some redress for the agriculturists in the present time of depression, which is well worthy the cause they espouse, and, as they hope, calculated to *stimulate the clubs of a like nature in other localities to be up and doing.* A petition to Parliament, setting forth the extreme difficulties under which the farmer is at present labouring, praying for the repeal of the malt-tax, and the imposition of a duty on all foreign corn and cattle brought into this country, has received nearly 400 names of the most respectable parties in this part of the country and the neighbourhood, among whom are occupiers of 80,000 acres of land.—*Essex Standard.*

In our country, boasting its peculiar freedom, farmers too rarely meet for free deliberation on the bearing of the laws upon their own interests. When it is proposed to them to unite, for example, in demanding the establishment of appropriate schools for the plough as well as the sword, you will see some old party bellwether or sly demagogue pass a knowing whisper—*Prenez garde! there's a cat in that meal-tub!*—and lo! the great cause of education is abandoned for the sake of—the party! The darker the moral atmosphere, the better for the demagogue.

IMPROVING LAND.

MANURE derived from cat-tails and bulrushes is worth something, but that which clover and peas draw from the earth is worth five times more, pound for pound. One hundred pounds of rye, harrowed into the earth, in a corn-field, at the maturity of the crop, has organized more than a ton of fertilizers by April, to be plowed in, and feed a summer crop. For ewes with lamb, or while nursing their offspring, a moderate allowance of green rye, early in the spring, is capital. Have valuable plants always growing the year round, so far as you can, on every rod of land, to feed domestic animals, unless it is thought best to sell the crops. To make the most out of vegetable vitality, it must ever be kept at work, accumulating manure, which should be saved *somewhere*. A pea can work wonders in the way of storing up fertilizers in an available form. A carrot seed has a gift in the same line; but the little clover seed has a perfect gem. Small as it is, the growing plant cannot live on air alone. It consumes a good deal of sulphur, and often requires gypsum to supply it.

Good farmers at the South make great use of forest leaves, and leached ashes, in their compost heaps. These leaves are generally rich in potash, and other earthy salts, as well as in organic matter.

Suppose you raise sheep for their wool, meat, and tallow, and sell them when three years old. The manure that can be made by a sheep in three years, with the aid of good plants to draw minerals from the subsoil, and gases from the atmosphere, will be about equal to the production of food for two sheep at the end of the term. Nothing is plainer than the fact that organized matter, consumed and voided by a sheep, will greatly favour the growth of food for another animal. And, although about sixty per cent. of the matter eaten escapes from the lungs in the form of carbonic acid, and vapour—and through the pores of the skin, by insensible perspiration—yet the other forty per cent. voided by the bowels and kidneys adds more to the soil, in the way of mould, than was probably consumed in making the plants fed to the sheep.

Rural industry is very generally spread over too much surface to be profitable in the highest degree. This occasions great waste of travel in a man and beast. It also leads to a bad system of husbandry, by robbing remote fields of their fertilizing atoms, not a few of which cows, and other domestic animals, drop in the highway. A farm being a sort of chemical laboratory, it is miserable economy to have it ten times larger than one has any use for. Less land, and more money drawing seven per cent. annual interest, which will double the principal in ten years and a half, would be an improvement in the circumstances of more than one reader of this journal.—*Genesee Farmer*.

Give the Devil his Due.—That bad king and worse husband, Henry VIII. of England, was yet not a bad pomologist. To his honour be it said, that he imported for the royal gardens, from France, both apples and pears. Many passages, it is said, may be found in his correspondence with his ambassadors abroad, on the subject of fruits. He is entitled to the credit of having imported into England the *Pomme du roi*, vulgarly called the Pomeroi apple—also the *Pair de Maine*, as well as most of the pippins.

It would not be amiss if we, in the diplomatic correspondence of some other countries, were favoured in like manner. Mr. Jefferson, when Minister to France, paid a visit to Parma, and there, in the dairy, noted and published the whole process followed in making the celebrated Parmesan cheese.

POTATOES.

THOUGH this is not the time of year to put it in practice, yet it is the time to see the evil effects of other plans, and therefore I mention it now. I believe I got the idea from some one of your correspondents some years since. When you get up the potatoes in autumn, instead of putting them in hogs or pies, as they are called, mark out in a level place ground three feet wide, level it about two or three inches above the surface, spread your potatoes upon it one layer thick, then put two inches of soil, then a layer of potatoes, then soil, and so on, gradually coming up to a ridge. At first a very slight quantity of soil will do, but before winter sets in they require a covering of six inches, and some fern or litter over all in frost. This plan seems tedious, but is in reality done as quickly as hogging, or very nearly so. It keeps the potatoes excellent to eat, preserves them from rot better than any plan, and for seed nothing can beat it. I have been planting the last fortnight, and the seed taken out of these earth hogs is just as when it first came out of the ground in autumn, the eyes just showing, and the skin fresh, healthy, and bright. My gardener had a great prejudice against this plan at first, but now, after three years' practice, says there is nothing like it. I believe it does much to invigorate the potato plant, as there is no vital force lost in pushing sprouts. I am aware that gardeners often keep their early kidney seed in outhouses, &c., upon this plan, but this cannot be done with a large quantity for field culture, added to which I find the potatoes keep much better, both for eating and seed, than when spread in a cellar, on a granary floor, or packed in barrels.—*English Paper.*

Peeling Potatoes.—Payen, the great French chemist, informs us that starch is not found in the epidermis, or in the tissues immediately subjacent, but that nitrogenized matters principally reside in these parts of the tuber. Hence a loss of the most nutritious portion of the vegetable is incurred by the common practice of peeling off the rind and parts underneath, before the boiling commences. It should also be remembered that cold water dissolves, while boiling coagulates, albumen. If potatoes, therefore, are thrown into cold water, and gradually heated, much of their nitrogenized principles will be extracted before the water reaches ebullition, while if it be made to boil before they are introduced, the coagulation will cause these matters to be retained within the tissue of the vegetable.

Fall Crop.—Early this month, [July,] if not done in the last, a fall crop of potatoes may be planted in the Middle States. The ground may be furrowed out, pretty deep: let the furrows be three feet apart, and a good coat of rotten manure spread in them, about three inches thick; place cuttings of the potatoes having two or three eyes in each, about ten or twelve inches apart, in the rows, and cover them with about six inches of earth. A few days before they shoot up through the ground, harrow them over with the back of the harrow, which will considerably check the growth of the weeds, and after they appear above ground, a small harrow may be run over the ground, between the rows, which may be expeditiously done; after which the hoe and plough must be used to destroy weeds.

The potatoes planted early in the spring will now be fit for use.

SHEEP OF CLARKE COUNTY TWENTY YEARS AGO.

New Market, Clarke County, Va., May 30, 1849.

DEAR SIR,—I send you a scrap from an old Winchester paper, as confirmatory evidence, (in addition to that of my friend Thomas F. Nelson,) going to prove that the sheep of Clarke County, twelve years ago, would have borne a very favourable comparison with those of the present day. The fleeces of Mr. Meade's sheep, as stated by Mr. Nelson, were much more remarkable than Mr. Burwell's; but the scrap speaks for itself, and revives the memory of old things that are passed away, and should not be forgotten in this age of seven-league-boot-strides in improvement. I think I am not mistaken in saying that Mr. Meade and Mr. Burwell gave the first impulse to the improvement of stock in this county. Mr. Burwell's sheep were a cross of Bakewell, Southdown, and Barbary: the memorandum was taken about the year 1837.

Yours, most respectfully,

ROBERT C. RANDOLPH, M. D.

Unprecedented Weight of Sheep and Wool.—When the sheep at Spout Run were sheared, on the 18th of May last, a yearling ram and five of the ewes were weighed, as follows: the ram, 174 lbs.; his fleece 5 lbs.: 1st ewe, 196 lbs.; fleece 5 lbs.: 2d ewe, 170 lbs.: 3d ewe, 190 lbs.; fleece 7 lbs.: 4th ewe, 164 lbs.; fleece 5 lbs.: 5th ewe, 164 lbs.; fleece 5 lbs. Only two are considered at all above average weight of the flock. The wool was *clean-washed*, otherwise the fleeces would have weighed from 7½ to 11 lbs., and the ewes were all suckling lambs. These two considerations taken into view, it is believed to be the greatest exhibit of weight of carcass and fleece ever made in the United States by a flock of ewes. These sheep were raised and improved by my friend Mr. Thomas H. Burwell, of Spout Spring [Run], Clarke County, Va.—*Winchester Virginian*.

POOR HUMAN NATURE!

Neighbours.—I have heard of a gentleman of large fortune, who, for some years after his residence in a particular neighbourhood, did not set up his close carriage, but afterwards finding it more agreeable to do so, was surprised to find himself called upon by a host of carriage keeping people, who did not seem previously to be aware of his existence; and rightly deeming the calls made upon his carriage rather than *himself*, sent round his empty carriage to deliver cards in return.—*Howitt*.

Can any thing be more at once contemptible and ridiculous than the rivalry we sometimes witness in large towns between the "ladies" of the *new-rich*, as to the *livery* of their coachmen and out-riders, and even the horse-covers! Their coal-black servants, with their milk-white gloves and gold bands on their hats, and long white comforts dangling from the necks of their footmen! You shall see the smirking wives of some, born in Bottle Alley, who have grown rich by luck in trade, seek to gain distinction and contrive to have *their* equipage "look far at a distance" by covering their drivers in winter with great scarlet blankets! How much more sensible to take the course of moderation and decent propriety suited to our republican institutions and habits, and to laws under which even the largest fortunes dwindle to a pittance in the hands of the third generation!

How much more honourable would it be in some of these semi-millionaires, if they would have painted on the panels of their fine coaches a molasses hogshead, a hatter's block, or a shoemaker's bench, awl, and lapstone, with the motto, "Honour thy parents!"

A PROTEST AGAINST PUFFING.

IN respect of the following, we are at some loss what to say, not fully understanding what is meant. In the first place, we have ever been disinclined to being the medium of criticism unfavourable to any "Editors of agricultural or other papers," except of ourselves, and for ourselves rather court than deprecate fair and well-meant animadversion: our convictions strengthening with experience, that no degree of vigilance or of honest intention can well guard against the occasional shortcomings and faults of editorial ignorance and indiscretion.

Now, as to Montgomery County, except "in regard to that important consideration of health," in which "no one will undertake to deny that Montgomery is highly favoured," we are not aware that she has ever been puffed off for the possession of any extraordinary natural advantages or fertility; but, somehow it must be admitted the impression *has* been imbibed, as to the "Sandy Spring" district, that it is somewhat remarkable for the natural fruits of systematic, intelligent industry, sobriety, and thoughtfulness of what they are doing. True, like some adroit and lucky politicians, it *may* have acquired a repute beyond its deserts. Sorry are we not to be able to speak from personal observation, for of all the counties of our native State, it is the one, except Caroline, of which we have seen the least; but we give our friends "of that ilk" fair notice that if we ever have the leisure and luck to beat up their quarters, we shall be disappointed if we don't find—"Find what?" says the reader.—Well, among other things indicative of thoughtfulness and thriftiness—gardens better filled with what the Yankees call "kitchen sauce"—orchards more thrifty—more ornamental and shade trees about their grounds and houses—boggy spots better drained—stock better sheltered and cared for—ploughs running a *leettle* nearer to the fences and ditches—wives rising earlier, and more tidily (not gaudily) dressed—more roses and honeysuckles and jessamines about the yards and doorways—dairies sweeter and cleaner—children better clad and mannered, and fewer worthless *dogs* and yet more worthless *drunkards*, than in some other counties, where liquor is sold "by the small," and gambling and swearing are esteemed gentlemanly vices, and *party politics* the only subject on which men can be excited to devote their mind and their means.

Montgomery County, Md., 5th mo. 16, 1849.

FRIEND SKINNER:—In accordance with a resolution of "The Farmers' Club of Sandy Spring, Maryland," I hereby forward for publication in "The Plough, the Loom, and the Anvil," a copy of some remarks written with a view of correcting erroneous impressions with regard to the state of agricultural improvement in our neighbourhood; and also to protest against the system of puffing pursued by some editors, in which sentiment we think we have the concurrence of a large majority of our agricultural brethren.

Very respectfully, thy friend,

HENRY STABLER,
Secretary of Farmers' Club of Sandy Spring.

"The undersigned, members of 'The Farmers' Club of Sandy Spring,' regarding the character of our neighbourhood, and the true interests of agriculture, as being compromised by the tenor of a certain class of recent publications, deem it proper to make the following declaration of our sentiments relating thereto.

"We have seen with regret a number of published statements in regard to the condition of agricultural improvements amongst us, which are calculated to mislead the public, and to raise expectations in the minds of strangers which an actual inspection would fail to justify. In order to set this matter in its true light, we will venture to present the following statement of facts. The neighbourhood of Sandy Spring, in which we reside, occupies a space of some nine miles in extreme length, by six or seven in extreme breadth, in the eastern part of Montgomery County. It is situated, for the most part, on one of the spurs of Parr's Ridge, having its north-eastern border watered by the Hawling's River.

This latter portion of the neighbourhood possesses considerable natural fertility of soil, and is well improved, containing some of the best farms in the county. But the residue of the neighbourhood, being the greater part of it, has not been particularly favoured by nature. The soil was never a deep or fertile one; and it has had to suffer the same process of exhaustion pursued generally by the early settlers of the State. Unlike what is inferred by strangers on hearing the name by which the neighbourhood is distinguished, the texture of the soil is rather *clayey* than *sandy* in its composition. We have no desire to disparage the quality of our lands, but the fact is undeniable that they are not generally very easy to improve. Still, abundant evidence has been given that they are susceptible of improvement in a high degree; and in the face of difficulties attending it, a decided and very encouraging change for the better has already been effected in their condition. It would be altogether improper to assert that there is a single farm lying out of the favoured section on or adjacent to Hawling's River, that has been brought as yet to anything like a high state of cultivation; but a good deal has been accomplished, here and there, "about in spots," which gives favourable promise of what the future is likely to bring. There is another point here, however, which we feel required to notice, by that desire to remove erroneous impressions, which has prompted us to make these statements. It is a fact that the greater part of the improvements recently effected in our neighbourhood, and especially the more showy part of them, has not been accomplished through the resources furnished by the soil itself. Many of our ingenious residents have other occupations, the profits of which have been meritoriously expended upon their farms. We conceive this to be a fact too material to our present purpose to be neglected or forgotten; and we have no fear that any good cause can be injured by the statement of facts. Agriculture is too weighty an interest to be propped up, or to need propping, by any concealment of the truth.

"We have been induced to make these statements with a view to vindicate our quiet and industrious community from the imputation of being a boastful people, ambitious of pre-eminence over others who pursue the same calling. Our great desire is to fulfil our duties as citizens, in a quiet and unostentatious manner, by contributing our humble mite towards advancing the agricultural interest of the country, and rendering it respectable in the eyes of all.

"In furtherance of this view, we wish also earnestly to protest against the system of *puffing* which has been pursued by some agricultural and other editors, the effect of which is not only disastrous to the persons thus extravagantly eulogized, but is destructive of all confidence in the value of editorial commendations; and the useful, the meritorious, and skilful farmer is thus deterred from exposing himself to the notice of the public. We desire to see that caution and modesty used in agricultural publications which will enable them to enlist and retain the confidence of the community, and thus to render the most important services to the great cause they are intended to promote.

"HENRY STABLER,	BENJAMIN HALLOWELL,
WM. H. FARQUHAR,	THOMAS P. STABLER,
CALEB STABLER,	MAHLON KIRK,
ROBERT R. MOORE,	EDWARD THOMAS,
RICHARD T. BENTLEY,	WM. JOHN THOMAS,
GEORGE E. BROOKE,	EDWARD LEA,
SAMUEL ELLICOTT,	ROGER BROOKE, Jr."

In this statement there is one fact particularly worthy of notice—that the greater part of the visible improvements have not been effected by the resources inherent in the improved farms, but by the profits of other occupations "meritoriously expended" for that purpose.

Surely that praise, if any, should not be called puffing, which is bestowed on the public spirit of those who thus devote the profits of other occupations to the purpose of showing how agriculture will ultimately remunerate any assistance she may derive from her sister pursuits. The effect is to teach moneyed men of the towns how they may better and more securely employ a portion of their surplus accumulations in the more useful and less precarious labours and arts of cultivation. But is not the susceptibility of Montgomery lands, and all that has been said in their behalf, in a great measure confirmed by the remark we find in an interesting report of the Montgomery County Agricultural Society, signed as Chairman by Mr. Farquhar, in

which it is said, "we are sanguine in the belief that the agricultural improvement during the last ten years has been *wide and general*!"

And again says the report, "Now since the annual value of the agricultural products appears to be at least \$600,000, we thus obtain a yield of 20 per cent.—a *pretty fair annual per centage* on the *capital of Montgomery*," and this, too, notwithstanding, as is added in the same document, "of the lands professed to be farmed at all, it may safely be said they are not more than *half tilled*." "Twenty per cent. on the capital of Montgomery County," and only half the county under the plough, and that half only half tilled. Who ever contended for higher capabilities or higher results? In what light this statement—this 20 per cent. on the capital of Montgomery County—is to be understood, we may take some early opportunity to examine. We had heard something of this report, and applied most respectfully, in what we deemed the proper quarter, for a copy, but were not favoured with any answer. It serves our purpose, however, reaching us through the ever-respected columns of our old "American Farmer."

HOW TO IMPROVE WORN-OUT LANDS.

IN the last number of Vol. I. under the head "Lime and other Manures," we gave some extracts from Mr. Stabler's Prize Essay, published in "The American Farmer," on the "Restoration of Worn-out Lands." According to promise, we now submit some from Col. Capron's Essay on the same subject. We are pleased to see him begin by dwelling emphatically on the *need of capital* in agriculture, and do not know any subject more worthy of investigation and report by a committee than the inquiry—Can any means be devised for securing to industrious farmers of good judgment and character, a moderate amount of means to be expended in lime and in draining? Let that question be one for discussion at Farmers' Clubs. Why is it that capital, wherever it comes into existence, maketh itself wings and flieth away into the towns? Even country banks, created in the promise of assistance to farmers in the way of advancements on their crops, soon fall under the influence of this centripetal tendency, and, applied to for a loan, take special care to make the farmer understand that he is first to give them "an acceptance" in the Metropolitan City, at "60 days," and to consider it a *great favour* to get it at that! But to return to Col. Capron's essay, regretting that we have not space for it entire. Here is what he says about CAPITAL:

To accomplish this great object, the renovation of worn-out lands—and to be perfectly successful in our farming, as in every occupation in life, *capital is not only desirable but necessary*. Industry and skill may supply the place of capital to some extent—capital would be of little use certainly, without proper judgment in its appropriation; hence the importance of availing ourselves, as far as possible, of the experience of other people, through the agricultural publications of the day. These, in the hands of a man of observation, lessen the required amount of capital—save many useless and expensive experiments—strengthen his own perceptions, and give him the advantage of the wisdom and experience, not only of farmers of the present day, but of ages preceding—and I would therefore recommend to every farmer, that the first entry upon his expense account should be for an agricultural paper.

A floating or working capital in this country is not looked upon as a matter of sufficient importance—the great object of an American farmer appears to be, how many broad acres his farm shall contain, not how much it shall produce him per acre, and therefore when he purchases a farm, he generally lays out the whole of his available means for the purchase of the greatest number of acres, leaving himself, if not in debt for the payment of his acres, already stripped of the very means to make it productive.

In England, a certain amount of active capital is considered a "*sine qua*

non” in a tenant—fifty dollars for each acre of arable land to be used as a floating capital for the purchase of stock, farming utensils, manures, &c., would be considered low. *In this country*, there are instances where \$100 have been expended annually in manure, upon an acre of ground, with a profit. Generally speaking, the want of success in the American farmer may be ascribed to this very great oversight—the deficiency of active capital. While in England the great success of many of their tenant farmers, borne down as they are by tithes and taxes, may be accounted for, in their judiciously using so large an amount of capital for the purchase of manure, seeds, stock, &c.

As capital then is considered one of the most important elements to success, I would recommend seriously to the consideration of the American farmer, whether he could not to advantage dispose of some of his broad acres, and apply the proceeds in bringing into more profitable cultivation the balance of his land—and I have fixed upon \$20 for each acre of arable land as a minimum sum required. The more you employ, judiciously however, the more *expeditiously and profitably* will you resuscitate your impoverished lands.

System is the next in importance, if not the most important object for the consideration of the American farmer, if he looks forward to independence in his occupation—for in this is economy, and without economy no farmer can prosper. He should have system in the regulation of his homestead, in the selection and arrangement of his farming utensils and stock—in the keeping of his accounts—in the feeding and watering of his stock—in the milking of his cows, and his going out and coming in from work. With a perfect system he must succeed, and without it he must falter, if he does not entirely fail.

Farm accounts are absolutely necessary to carry out any system—to check expenditures in unprofitable manures, and the cultivation of unprofitable crops; aside from the satisfaction the farmer derives, in being able to know at the end of the year, what he has made or lost in this or that expenditure: it prevents imposition, and enables him so to shape his course for the ensuing year, as to avoid such experiments as have proved unprofitable the year past, and profit by the further prosecution of those that have proved lucrative.

ARTIFICIAL MANURES.

Poudrette, I have found a good manure, (when unadulterated,) sown with grass seeds, and rolled in with them. Six barrels per acre, put on this way, on wheat, where guano has been ploughed under, will set timothy, orchard grass, and clover well.

Lime, the greatest and most lasting improver of nearly all soils, and one most to be depended upon, should always follow, upon all grass lays, the fall after the first crop has been removed. One hundred bushels per acre spread upon the sod, to remain for two years, is in my opinion the most judicious application of lime. I prefer this method of applying lime, to the slower, but not less certain mode of applying it to the surface of the old fields, to remain from three to five years without being cultivated. First, because you hasten your improvement, which is always gratifying, and by furnishing the vegetable matter for the lime to act upon, you can increase the quantity applied to advantage, and get a more speedy return for your outlay.

Men of large capital may renovate these worn-out lands with a profit, by the use of lime alone, as has been fully demonstrated upon a magnificent scale in this State—applying the lime at the rate of one hundred bushels per acre to the old fields, to lay five years, to be followed up by another

hundred bushels per acre, and at the end of the next five years you may calculate to get a ten per cent. interest for the money thus invested. For men of small capital, the only possible plan is to commence with the highly concentrated manures, and follow up with the lime as your means will allow—never losing sight of the fact that your lime must go on, sooner or later.

The manner of applying these different manures, which I have followed, and always with entire satisfaction, is as follows: If there are any gauls or washed places in the field, cover them well with stable manure, if you have it, or the richest woods' earth or ditch banks you can procure previous to breaking. Then fallow the whole field deeply, say eight inches—roll the ground to break the clods, if stiff soil, and follow with the harrow as directed. If ashes are to be used, when the ground is thoroughly prepared for seeding, throw them on broadcast, and plant or sow your seed, and harrow all in together. If guano be used, just before seeding spread your guano, and cross plough or cultivate it in, say four inches deep or more, sow your grain, harrow and roll. If poudrette be applied on same field, to set your grass seeds more effectually, sow your poudrette after cross ploughing your guano in, sow your seed and harrow all in together.

Bone Dust to be applied in the same manner as the ashes or poudrette.

Plaster should always follow all the above applications, in the spring of the year, upon the young clover, at the rate of one bushel per acre. March is the most suitable month.

This carries us forward in the stage of our improvement to a period when, if we have been judicious in our application of the manures, and thorough in the cultivation of our grounds, we may begin to dispense with foreign aid, and live upon our own resources, and adopt the self-renovating principle.

And now, Mr. Editor, it appears to me that, however we may differ as to the effect or permanency of this or that manure—or the best method of accumulating or applying manures, or the most judicious rotation of crops, or the most profitable crops to be raised, there can be but one opinion as to the fact, that if we expect large returns for our labour, we must be liberal in our treatment of the soil, liberal in the application of manures and seeds, and liberal in the labour we bestow in the cultivation of our crops; and always bear in mind that the cost of producing five bushels of wheat or other grain per acre on poor land, is the same, in labour and seed, as to produce twenty-five or forty on land in high condition.

It may be satisfactory to your readers (should you deem this worthy of publication) to know from what data I derive my information; and although it is disagreeable to me, as it must be to every one, to be thrusting his own affairs before the public, yet, having had the most accurate accounts kept with the farm, and the result being entirely satisfactory, I feel that the cause in which we are all so much engaged demands this sacrifice at my hands. I have therefore had prepared an accurate tabular statement of the whole outlay under different classifications, as also the receipts since my first commencement to improve this farm, from which I am enabled to present the following facts:

This farm contains 1092 acres, 700 acres of which have been fenced and improved, and the balance is in wood.

To show the effect of manure properly applied, I give below the amount expended annually in foreign manures, which, with all the manures that could be created on the farm by the increased product caused by this application of mineral manures, amounting in 1847 to near 1000 two-horse loads, were regularly applied, (all the hay and straw being consumed upon the farm.) The present year very little foreign manure is required.

	<i>Manures.</i>	<i>Grass Seeds.</i>	
1841—Purchased	\$347-63	\$113-41	Sold in value, nothing.
1842 "	734-80	63-49	" \$507-50
1843 "	262-60	155-83	" 1,344-41
1844 "	123-63	457-30	" 2,796-20
1845 "	1,124-85	226-97	" 3,722-51
• 1846 "	3,035-23	732-14	" 11,626-29
1847 "	2,546-02	519-50	" 14,777-02
	<u>\$8,174-76</u>	<u>\$2,268-64</u>	<u>\$34,773-93</u>
Total amount of receipts for the 7 years,			34,773-93
To which must be added the wood sold from the clearing up of the fields,			1,495-41
		Total receipts,	<u>\$36,269-34</u>

The following exhibit will show the entire outlay, exclusive of buildings:

Expended for manures,	\$8,174-76
" seeds,	2,268-64
" labour on farm, fencing, ditching, under draining, grubbing and cleaning 700 acres,	18,053-77
Other expenses, overseer, salaries, travelling, blacksmith and wheelwright bills, and materials for draining, &c.,	5,866-70
	<u>34,363-87</u>
	<u>\$1,905-47</u>

Leaving a balance, after paying all expenses for manures, seeds, fencing, ditching, grubbing, cleaning and improving 700 acres of barren land, in seven years, \$1,905-47. The improved value of the land being an additional gain.

This statement is exclusive of all outlays for land and buildings, and interest on same, farming utensils and stock, as those items are according to the fancy of the proprietor, and are supposed to be worth cost, and cannot be charged against the improvement of the land, the actual cost of which, it is the object of this communication to show.

The following tabular statement exhibits all the expenditures and receipts, embracing first cost of land, improvements in buildings, fences, &c., together with the present estimated value of land and tenements, as put upon it by disinterested parties, showing a complete sheet of the entire operations and the net gain in seven years, which I respectfully submit for your perusal, with the simple remark that the account of stock was taken 1st January, 1848, by disinterested parties, for my own satisfaction, in which all the full bred stock was put down at common stock prices, and all other stock and farming utensils at their cash value, making a difference of several thousand dollars below the first cost, a copy of which inventory will be left at the office of "The American Farmer," for the satisfaction of those who wish to inspect it.

As the farm is intended for purely a stock farm, all vegetable productions have been consumed upon the place, and the wheat, &c., have been sold and converted into other feed, and consumed by the teams and other stock, and the proceeds received in the way of milk, live stock, work done off the place by the teams, under the head of hauling.

The amount of sales of wheat and other produce not consumed during the same period, but sold and converted into feed for stock, was \$15,000. The purchase of other feed, \$15,800, the balance of purchase over sales carried into the expense account, and the produce account retired, to simplify the account, as it would not in the least alter the balance.

Expenditures.

COL. CAPRON'S FARM.

Receipts.

Date.	Manure.	Labour.	Seeds.	Expenses.	Total.	Date.	Milk.	Rents.	Hauling.	Live Stock.	Wood.	Inventory.	Total.
1841	\$347 63	\$752 74	\$113 41	\$285 87		1841		\$465 00	\$12 50	\$30 00			\$507 50
1842	731 80	989 60	63 49	285 88		1842		243 50	814 05	286 86			1,344 41
1843	262 60	1,134 92	155 83	428 42		1843		260 75	2,435 45	100 00			2,796 20
1844	123 63	1,569 36	457 30	542 96		1844		588 42	3,134 09	433 10			3,722 51
1845	1,124 85	1,890 47	226 97	234 67		1845	\$1,391 87	845 45	8,952 87	1,025 25	\$854 50	\$3,736 00	11,626 29
1846	3,035 23	5,301 67	732 14	1,214 94		1846	3,652 61	691 00	4,817 66				14,777 02
1847	2,546 02	6,112 01	519 50	2,873 96		1847							
	8,174 76	18,053 77	2,268 64	5,866 70	34,363 87								
To improvements, embracing Barn, Tenant Houses, Fences, &c.					13,743 39	Wood sold from clearings, 1,495 41							
To 1092 acres land, original cost, \$10,361 62						Whole amount of sales, \$36,269 34							
To interest from average time of purchase, from 1st Jan., 1845, to 1st Jan., 1848, ... 1,865 09						By Inventory of Live-Stock, Farming Utensils, and produce on hand, to January, 1848, as taken at a low cash value, ... \$11,377 50							
						By less amount included in above table, ... 3,736 00							
To amount paid for implements, cost, freight, &c., included, ...					12,226 71	By present value of 1092 acres of land, and buildings, as estimated by the Farm Committee of Prince George's County, at \$60 per acre, ...							
To amount paid for live-stock, cost, freight, expenses, &c., included, ...					3,247 49								
					8,332 73								
					37,516 65								
					Balance down, 37,516 65								
					\$109,430 84								

LIVERPOOL PRICES.

The following table, showing the net value in dollars and cents, of Flour, Wheat Corn, and Corn-meal, at the respective prices in Liverpool, will be of interest to produce dealers and farmers. It shows what the Liverpool prices will net to the American shipper:

Cost of Wheat, $11\frac{1}{4}$ American bushels calculated to net 70 lbs., including freights at 8s. per qr. of 480 lbs.; duty 4, insurance, one month's storage, all landing charges and commissions; exchange, 108:

Free on board. Per bushel 56 lbs.	In Liverpool. Per bushel 70 lbs.	Free on board. Per bushel 56 lbs.	In Liverpool. Per bushel 70 lbs.
	s. d.		s. d.
\$1-00	7 7	\$1-30	9 3
1-05	7 10	1-35	9 6
1-10	8 2	1-40	9 10
1-25	8 5	1-45	10 1
1-20	8 9	1-50	10 4

Cost of Flour, including freight at 2s. 6d. per bbl. and 5 per cent., one month's storage, duty 2s. 5d., insurance, all commissions and landing charges; exchange, 108:

Free on board. Per barrel 196 lbs.	In Liverpool. Per barrel 196 lbs.	Free on board. Per barrel 196 lbs.	In Liverpool. Per barrel 196 lbs.
	s. d.		s. d.
\$4-50	26 6	\$6-00	33 2
4-76	27 8	6-25	34 4
5-00	28 9	6-50	35 5
5-25	29 10	6-75	36 6
5-50	31 0	7-00	37 8
5-75	32 1		

Cost of Indian Corn, $8\frac{1}{2}$ American bushels, calculated to net qr. 480 lbs., including freight 5s. per qr. and 5 per cent., duty 1s. per qr., one month's storage, insurance, all commissions and landing charges; exchange, 108:

Free on board. Per 56 lbs.	In Liverpool. Per quarter 480 lbs.	Free on board. Per 56 lbs.	In Liverpool. Per quarter 480 lbs.
	s. d.		s. d.
30 cents.	20 7	60 cents.	31 11
35	22 5	65	33 10
40	24 4	70	35 9
45	26 3	75	37 7
50	38 2	80	39 6
55	30 0		

Cost of Indian Corn Meal, including duty at $4\frac{1}{2}d.$ per cwt., freight 2s. 6d. per bbl., and 5 per cent., one month's storage, insurance, all commissions and landing charges; exchange, 108:

Free on board. Per barrel 196 lbs.	In Liverpool. Per barrel 196 lbs.	Free on board. Per barrel 196 lbs.	In Liverpool. Per barrel 196 lbs.
	s. d.		s. d.
\$2-00	13 5	\$3-25	18 11
2-25	14 6	3-50	26 1
2-50	15 8	3-75	81 2
2-75	16 9	4-00	22 3

It is here shown that at 26s. 6d. in Liverpool, a barrel of flour will yield but \$4-50 in New York. It is now only 22s. 6d. and would yield little more than \$3-50, but for the reduction of freight.

Ashes.—The quantity of ashes left by a ton of wheat straw is sometimes as much as three hundred and sixty pounds; by a ton of oat straw as much as two hundred pounds; while a ton of the grain of wheat leaves only about forty pounds.

CULTIVATION OF TOBACCO IN ENGLAND.

THE question of the practicability of growing tobacco in England has lately been revived by the Duke of Richmond, who laid before the Royal Agricultural Society a pamphlet by a Mr. Little, who asserts, (on a most unsatisfactory experiment in Ireland,) that tobacco growing in England would be highly profitable, and ought, therefore, to be permitted in the present depressed state of agriculture.

The proposition, and all the alleged facts on which it is based, are very justly ridiculed by the Editor of "The London Agricultural Gazette," who says truly they might as well permit or pass laws to encourage the growth of coffee or cotton in England. The climate forbids it. There is no danger of England supplying herself with either corn or tobacco by home cultivation, or with cotton from her East India possessions. The Editor of "The London Agricultural Gazette" goes on to add what may have interest for American cultivators of tobacco, as follows:

"What the government should do, for the sake of revenue, as much as for the pecuniary advantage of the public, is, to reduce the duties on tobacco, so as to render smuggling a ruinous trade. That in one branch of the tobacco duties the frauds and smuggling are enormous, in consequence of an extravagant duty of 9s. 6d. per lb., is notorious. We allude to cigars; and as means exist of showing to what an extent the frauds in this article of trade must necessarily be, we take it for the sake of illustration.

"The quantity of foreign cigars which pay duty in this country may be taken to average from 25 to 28 millions annually.* But Cuba alone exported to Great Britain, in 1847, 26,760,000, according to the Parliamentary returns, and there must be an enormous additional quantity brought here from further sources. In 1843, the British West Indies exported to this country cigars to the value of 477l.; in 1842, some are reported among exports from the Mauritius, and we presume that small quantities, which we have not remarked, are mentioned as having been sent from other places.

"In the returns of exports from most cigar-making countries, no distinction is made between those sent to Great Britain and elsewhere, but it appears that the quantity exported from the following places was as follows:

"German Commercial Union	1842	604,898,200
Belgium	1844	45,101,500
France	1843	140,673,000
Manilla	1839	42,400,000
Venezuela	1847	167,692

In round numbers these countries alone export annually about 830 millions of cigars, reckoning only 100 to the lb., instead of 120, which is nearer the truth.

"But it would seem that Cuba alone sends here fully as many as pay duty, and that none can arrive from any other part of the world. Yet if we consider what a large quantity of Manilla cigars is publicly sold, and the probability that a great portion of the 700 or 800 millions exported from European countries is landed on our coast, no reasonable doubt can exist that the larger part of all the foreign cigars consumed in this country is smuggled. We have heard it estimated that not more than 1 lb. in 3 lbs. pays duty; and thus it must always be so long as the present customs' charge of 9s. 6d. per lb. is insisted upon. We suspect that the unmanufactured tobacco would give very similar results.

"If we are at all near the truth in these calculations, it is perfectly clear that the relief to be solicited from government, for the benefit of the middle and lower classes, consists not in permission to seek destruction by engaging in a ruinous and worthless cultivation, but in a large reduction of duties, which impoverish the exchequer, press heavily upon the consumer, and benefit nobody except the smuggler.

"We entirely agree with Earl Grey in the observations he made the other night, in the House of Lords, in reply to the Duke of Richmond — 'It had been complained,' said his lordship, 'that injustice was done to the farmer because he was not allowed to grow tobacco; but their lordships knew that the climate of this country was so unfavourable to the growth of that plant that, if foreign tobacco were admitted free of duty, there was not the remotest possibility that our growers could enter into competition with those of foreign

* It is difficult to say what is the average number of foreign cigars in a pound. The ordinary sized run to about 120, regalías to about 75; intermediate sizes exist in trade; small cigars are not sold, we imagine, in sufficient numbers to be worth calculation.

countries. The present law was merely maintained to support the revenue, and to prevent an artificial trade from being bolstered up by the circumstance that a duty was levied upon foreign tobacco, while no duty was imposed upon English tobacco. If there were any possibility that persons in this country could grow tobacco upon equal terms with the foreign producer, he apprehended that there could be no objection to applying the same principle to tobacco which had been adopted with regard to beet-root sugar, which was allowed to be manufactured in this country on paying the same duty that would be charged upon it if it were manufactured in the colonies.' That is the only view of the question which a statesman can take; and we trust it will put an end to the idle schemes of men so ignorant of the connection between climate and vegetation as to be unable to understand why a tropical crop, demanding much labour, cannot be grown profitably in the North of Europe, where labour is necessarily dear.'

But we must not flatter ourselves that any increase of consumption that would follow a reduction of foreign duties on our tobacco, would lead to any material and permanent increase of the price of tobacco. The fact is, that the region of soil and climate within which tobacco may be grown in our country, is immense. The whole West is filling up with labour which finds better remuneration in tobacco, even at \$3 or \$4 a hundred, than in grain or provisions, and transportation has been so much cheapened by the application of steam, and the construction of railroads and canals, to settle up the West and to enrich our large cities, that tobacco will never again be a very remunerating crop, any more than grain, in the old States on the sea-board.

After all, it is of great importance to have this staple admitted on reasonable terms in Europe, for although it might not essentially raise the price in this country, it would greatly increase both consumption there and production here, and so far divert labour from other over-done branches of agricultural industry. But instead of admitting our tobacco on reciprocal terms, with all their boast about *free trade*, the American planters receive less than 7,000,000 of dollars for their property on which the *duties* levied in Europe amount to \$35,000,000, making this commodity yield to these governments in revenue five times as much as the article itself is worth to the producer.

SHEEP HUSBANDRY—SHIFTING ITS GROUND.

FROM what we see, this subject is gaining upon the public attention, at the same time that it is in a state of *transition* from the North and East to the South and West, which nothing but unthriftiness and want of forecast have prevented it from doing long since. The natural sheep-walks of our country—that is, of that which was our country—(until we have spread out to—the Lord only knows where!) lie south of the Delaware, along the slopes and mountainsides of Western Pennsylvania, Maryland, Virginia, the Carolinas, Georgia, Kentucky, and Tennessee.

It is now admitted that to carry sheep through the year in Vermont, costs from \$1.10 to \$1.20, and, under conviction that it won't pay, dairy husbandry and cattle-raising are superseding sheep and wool.

The Vermonters think their beef of somewhat better quality than the Western beef.

Under all circumstances, it surprises us that any reading farmer within the regions designated, should forego the ample instruction to be derived from Randall's unequalled work on Sheep Husbandry.

How much Meat in a given quantity of Turnips?—The experience of one winter, some years ago, with a considerable flock of sheep folded over 30 acres of common and Swedish turnips, led to the inference that 1 lb. of meat is made during the consumption of every 150 lbs. of green food.

WHAT AMERICAN FARMERS ARE COMING TO.

[From a late English Paper.]

The Assessed Taxes.—There is nothing in this country so nearly amounting to personal slavery as these imposts. You cannot add a pantry to your house, you cannot open a loop-hole in your cellar, or put a light over your hall door; you cannot ride a mile on old Dobbin, the carrier's horse, you cannot rescue a lost dog from starvation and harbour him for twenty-four hours, you cannot employ an occasional waiter for one evening in the twelvemonth, you cannot write a letter to your grandmother and seal it with your grandfather's seal, you cannot take an old pony from the paddock and send a labourer on his back to summon the doctor, you cannot send your carriage to be repaired and use an old "trap" once or twice in its stead, you cannot employ a youth out of the village to help half a day in your garden, you cannot exceed so many inches of window, of wheel, or of pony; in fact, you can hardly do any thing without finding yourselves liable to an over-charge, a summons, and an appeal, and compelled either to put your name to what is literally a false and insufficient declaration, or pay duty for another dog, window, servant, horse, or carriage, as the case may happen to be.—*Times*.

We in the United States are on the high road to the same state of things, and as long as the cultivators of the soil allow themselves to be ridden by demagogues, of whatever faction, in their scrub-races for the "spoils" of power, so long will the expenses of our government go on increasing, from year to year. Places will be made for favourites and relations; and taxes be levied to pay them. Look already at the extension of our diplomatic agencies, and at the accumulated and accumulating power of the military! How many members of Congress are there who are altogether unconnected with some one who is himself, or has some near connection in the army or the navy? And, pray, reader, has an agricultural journal nothing to do with such questions? Are farmers not concerned about the *taxes*? Alas, good easy souls, many of them *do not know that they are paying any*; while the fact is, that millions of manufactures are let in at low duties, expressly to "raise revenue" to pay for useless diplomatic and military establishments, and pensions; the cost of these imported manufactures being all the while made up, almost entirely, of the foreign *agricultural produce* consumed in their preparation. With our great and growing population, and distance from other countries, our means of transporting militia to any menaced point—our West Point educated elves, to discipline, as General Jessup says they can do, "the whole militia of the United States in sixty days;" we have now only to administer our government in a spirit of justice and moderation, as shadowed forth by President Taylor, and there will be no danger of wars with foreign powers. What government would be mad enough to attempt to invade the United States at such tremendous cost as it must be done, and with such certainty of defeat? The very thought of it is absurd! Why, then, go on for ever keeping up armies at the expense of some \$15,000,000 a year! In the next twenty years we shall have expended again—even in peace—another \$500,000,000 at least, and for what? Ten times more than enough to complete all the projected lines of railroad connection, starting at various points, from Boston to Savannah, and leading across the Continent from the Atlantic to the Ohio and Mississippi. Ay, more than enough for the great road from the Mississippi to the Pacific; and yet we have not the power, forsooth, to put in even the one link that is wanting in Alabama to complete the great Atlantic steam connection from Maine to New Orleans! A British prime minister used to say, "*I love the farmers: they stand as quietly as their sheep to be shorn,*"—and is England the only country in which they bear to be fleeced so quietly? Thus, it is to be feared, they will continue to stand, until the skin is taken off next;

for it is ten to one but we lose the support of some subscriber, virtuously indignant that in what we here say we should so far *meddle in politics* ! If farmers would not willingly submit to be shorn, let them follow the example of the “free traders” of England—let them, too, have recourse to *frequent meetings and constant agitation* !

If they would do that, they would get for the farmer that which everywhere puts the professional and the military man above him—they would get as *good* education at the public expense, for the plough, as *they* (the farmers and planters) now give to the sword. All our great military establishments would be turned—as the best system of defence for our country—into *schools* for teaching the principles of agricultural chemistry, geology, mechanical philosophy, civil engineering, land surveying, bridge and house building ; and then their sons, too, would fill the high places of power, and direct the public policy for the public good. They would no longer “stand quietly like their sheep to be shorn.” But how is it now ? Why, for this honest expression of our thoughts, without caring a fig about what *party* they may please or offend, the probability is that we, who are standing, as it were, on a rolling-stone, to keep our chins above water, with much difficulty to do that, shall be left without even that precarious support ; while, in England, those of the free traders who won’t stand quietly to be shorn, but seek to shear the farmer, meet together, and agitate !—agitate ! !—and having succeeded, club together and make up a snug little *purse* of £70,000—\$350,000—for their advocate, Mr. Cobden !

Farmers, you had better pull off your party spectacles—look at things with your own natural eyes—say you won’t stand quietly to be shorn any longer, but kick up and throw down party riders : *go for your own country*, and for the *landed interest*, on which all other interests live, as leeches live by sucking your blood. Take the foreign market as it comes—up to-day and down to-morrow—but first build up and depend on your *own market*, by offering encouragement and protection to those who will come near to your ploughs and your harrows, with their looms and their anvils, their shop-boards and benches, their hammers and their trowels, and spurn from your employment and confidence the representative in Congress who will vote one dollar for military, without first securing *at least an equal amount* (to begin with) *for civil instruction* !

Now tell us, reader, farmer or planter as you are, is there one sentiment advanced here, that will be echoed or justified by any of the party papers you take, and for which you so cheerfully pay, while so few will give even two bushels of wheat for the journal of a man who, for more than thirty years, has scarcely thought or dreamed of any thing but how he could advance your prosperity !

NEW AND CHEAP ROOFING.

THE lightest, cheapest, and most efficient roofing material is *Croggon's Patent Improved Asphaltic Felt*. A house, 40 feet by 24 feet in the clear, may be erected complete, for 17l. 17s. 10d. Price of the Felt, one penny per square foot, in rolls 32 inches wide. Samples and details may be had by post. A large stock always on hand, to insure punctuality.—CROGGON and Co., 2 Ingram-court, Fenchurch-street, London.—*English Paper*.

We believe this to be the same material we have seen on sale at Mr. W. Gilmor's warehouse, in Gay street, Baltimore, and have been surprised not to learn more about the use of it, as it seems to us to be an exceedingly useful and convenient article. If any one has tried it, we should be glad to learn the particulars. Surely it must be cheaper and more portable and *come-at-able* than shingles.

THE FARMERS' NOTE-BOOK.

NOT of *bank* notes, gentle reader—would that it were; but notes of all sorts of things that we see, or read, or hear of, on the wayside, that may be supposed to convey items of information either entertaining or useful to our patrons. If you knew how various are the pursuits and tastes of those who patronize “THE PLOUGH, THE LOOM, AND THE ANVIL,” you would at once perceive that a receptacle like this opens to us a sort of *omnium gather’em* in which “all sorts of paragraphs” may be stowed away. For instance, the last six subscribers on our list, up to the present writing, (June 1,) are—the secretary of a water company, a tailor, a merchant, a butcher, a livery-stable keeper, and a sadler—surviving partner of our old friends Jenkins and Lilly, Baltimore.

The truth is, that let men be following what business they may, there is an abiding proclivity, almost universal, to enter, some day, on what every man’s fancy has pictured, at some time of his life, to him as the *happy life of an independent farmer*! Well do we remember, when, thirty years ago, we meditated the establishment of a paper expressly for the advocacy and enlightenment of the landed interest. We met at the ever-lively and joyous dinner-table of the late R. O., of Baltimore, a clergyman from the “Green Isle,”

“——— as jolly an old soul
As e’er crack’d a bottle or fathom’d a bowl.”

Mentioning our design, and asking, from his ample store of classical recollections, a suitable motto, he promptly answered, “Och, sir, yes! you may give them from Virgil:

“Oh fortunatos sua si bonâ norint
Agricolâs—”

And under that sign, accordingly, retained to this day, the old “AMERICAN FARMER” made its first appearance, April 2, 1819. And well might the poet say, *if* they did but know it. With equal truth said Horace: “*Nemo cum sibi sortem contentus vivat*,” &c. Nobody is content with his own lot: and of all the classes of mortal men, are not farmers the most incessant croakers? What with now too much rain, and next too little; and then the fly and the weevil—the striped bug, the rose bug, and the chinch bug—wire worm in the wheat, grub worm in the corn, horn worm in the tobacco, and the army worm in his cotton!—always apprehending short crops, and always getting low prices, one might think their troubles equalled only by the sufferings of Job himself; and yet take any number of cultivators of the soil, of sober and industrious habits, and sound discretion, and it is not to be denied that in the long run they will come out safer and sounder than a like number of any other class. They may at least be sure of that great and indispensable ingredient of happiness—exemption from debt—and for the rest, the older one grows, and the more he sees of what is passing around him, the more he becomes satisfied how little is the connection between happiness and riches. Let every farmer, then, who would study the happiness of his son, impress this truth upon his mind, and teach him that virtue and knowledge are the only objects fitted to stimulate the ambition and to adorn the character of man. “Wisdom,” saith Solomon, “is the principal thing—therefore get wisdom.” From this text, when a little school-boy, in Calvert County, we remember to have heard the venerable gray-headed Evan Thomas, of Montgomery County, pronounce a discourse in an old Quaker meeting-house, which stood solitary and alone in the woods,

on our paternal acres. "One comes into the world naked, and goes out naked. The difference in the fineness of a bit of linen for a shroud is not much. Man is a handful of clay which turns rapidly back again to dust, and which is compelled to relapse into the nothingness of sleep, to get strength against the morrow."

But to return to our subject: to whatever influence it is to be ascribed, yet so it is, that whether lawyer or doctor, or seaman or soldier, mechanic or merchant, there seems to be in the bosom of them all, a lurking propensity, perhaps unavowed even to themselves, when they shall have laid by enough from their earnings, to "buy a little farm," and settle down in the country, with wife and children around them, where they can quietly hoe their own cabbages, plant their own vines, gather their own figs, eat their own eggs, and churn their own butter, and sing the old song:

"I'll eat my own lamb, my own chickens and ham,
I'll shear my own fleece, and I'll wear it."

Be ye not surprised, therefore, gentlemen farmers, of whom so many among you, with all your broad acres, are too inert to read, or too penurious to subscribe for an agricultural paper, or any other except rank *party* papers—be ye not surprised when we tell you that no small part of the support for "The Plough, the Loom, and the Anvil" is drawn from lawyers and doctors, merchants and mechanics, who at present own not one foot of land, not even six by eight. But to all these we will endeavour to offer something in the way of requital—something that shall help them to realize their dreams of the happiness of rural life, and in the mean time, let the first lesson be to keep their children out of the streets—to lead them to the *love of books*, and that "evil communication corrupts good manners." And now to

OUR NOTES.

GREEN WHEAT FOR SOILING.—Never did we see such a thing before to-day, (June 1.) Coming along Lexington street, Baltimore, saw a man carrying turns of green *wheat* into a back yard—followed him to see what it meant, when we had the pleasure to encounter Dr. Jamison, who told us that on a rich lot it would come in close succession to the rye crop used for same purpose; but that he was satisfied it was more valuable, containing decidedly more of saccharine matter, and being, as he had often remarked, *greatly preferred by his cows*, to whose judgment he, in such case made and provided, was disposed to defer. He prefers it to clover, as less apt to inflate or *blow up* the cows, and in fact producing milk of a superior quality. We deemed it worth noting, as one great difficulty in carrying out a system of *soiling* seems to be in the procurement of an unbroken succession of suitable food.

INDIAN CORN FOR SOILING.—The late Timothy Pickering, who always ranked very high as a practical farmer, bestowed high praise on Indian corn, sowed broad-cast or drilled, for soiling. Nevertheless, a very respectable Committee of Essex County (Mass.) farmers—and there are none more inquisitive or exemplary—expressed strong doubts, as we see in their last "transactions," as to the reputed value of this plant, especially when used for the *production of milk*. The knowledge of its properties in *all its parts*, and in *all the stages of its growth*, to be ascertained by rigid analysis, is one of the wants of agriculture, which we doubt not, when he can get time to look around, will command the attention of the Secretary of the Interior. We hope to see a watchfulness over the demands of agriculture, so far as it lies within the functions of his office, distinguish, as we doubt not it will do, his administration of the Home Department—and to what public purpose,

so beneficent, can he devote his mind and the means at his command? His whole career and associations give assurance of his sympathy with all that concerns the cultivators of the soil. The editor of the "Boston Cultivator" says:

'An acre of good corn land, well dressed, will generally produce four or five tons of dry fodder, and four times that amount of green. As feed grows short the latter part of summer, particularly on dry lands, the farmer should provide some fodder for his cattle; and none is cheaper than that of Indian corn, as has been abundantly proved on the milk farms in this region, where the practice is almost universal.

"The famous Chinese Tree corn is an excellent variety for fodder, yielding a large crop, of excellent quality. Some farmers plant the sweet corn, as it yields fodder of a superior quality. The southern corn grows rank, and yields more than the northern; yet some prefer the northern kinds, as they produce fine fodder, and the cattle eat them more readily; yet the majority prefer the southern, on account of its productiveness. The Chinese yields nearly as well as the southern corn, and the fodder is better.

"Corn, for fodder, is often sown broadcast and harrowed in; but the crop will be larger if planted in drills, and dressed once by the use of the cultivator and hoe. By rather thick planting, a very large growth is prevented. Make the drills about three feet apart for large corn, and let the spears stand only two or three inches apart in the drill. It is often sown in broad drills, and allowed to stand so thick that there will be ten or twelve stalks to a foot in length."

COTSWOLD SHEEP.—The May number of "The English Farmers' Magazine" is embellished with superb engravings of the Polled Angus Bull, which obtained the Highland Agricultural Society's prize of \$100, at the Society's meeting at Edinburgh, 1848, and also portraits of two Cotswold Rams, which took the first and second prizes at the Royal Agricultural Society's Show at York, England, in 1848. These last portraits are accompanied with the following brief but comprehensive notice of this breed of sheep, now sufficiently extended in the United States, to make it proper to be copied and diffused, as here it will be, all over the Union. Besides, doubtless, many others, these sheep are in the hands of Col. Ware of Virginia, and Mr. Sotham of Buffalo. Mr. Reybold, of Delaware, has perhaps a yet larger breed of the same character, called the New Oxfordshire. The following is the description in the English Magazine:

"This breed derives its name from the Cotswold wolds, a tract of calcareous hills in the eastern division of Gloucestershire, which are comparatively infertile, but yielding a short, sweet herbage in its natural state. It derives its name from *cole*, a sheep fold, and *would*, a naked hill. The modern Cotswold sheep differ from those which inhabited these hills in former times. In 1629, Adam Speed thus describes the breed: 'On those famous hills, called Coteswold hills, sheep are fed that produce a singular good wool, which for fineness comes very near to that of Spain, for from it a thread may be drawn as fine as silk.' At the present day, the Cotswold sheep are of a size somewhat superior to the highest breed of Leicesters, and their wool is more close on their body. The staple measures from 6 to 8 inches, and the fleece weighs upon an average from 7 to 8 lbs.; in inferior flocks not exceeding 5 or 6 lbs. It is strong, of a good colour, rather coarse, but mellow. They have a tendency to produce fat on the rump, almost producing deformity; but their constitutions are good, and they are a hardy race. The females, too, are considered good nurses, and are prolific; and the lambs are early covered with a close fleece. They weigh, when from a year and a half to two years old, about from 20 to 30 lbs. the quarter. Their most recommendable qualities are their hardiness and property of thriving under common treatment, and the faculty of the females of producing numerous lambs, and supporting them well."

COLONIAL SYSTEM—ITS EFFECTS ON AGRICULTURE.

Arbury, deposited her own egg in their place. When the egg was hatched, the young intruder was fed by the water-wagtails, till he became too bulky for his confined and narrow quarters, and in a *figdely* fit he fell to the ground. In this predicament he was found by the gardener, who picked him up,

fectly reconciled to its loss of freedom. It ate fresh meat of any sort, cut small and mixed with bread scalded and broken, and a raw egg. On this diet the bird did well for three months. At this time a lad brought some yellow-hammer's eggs, intending them as a treat, one of which the bird unexpect-

The British Province of New Brunswick is becoming depopulated. Every vessel that comes thence is filled with men, women, and children, flying to seek refuge within the limits of our Union. So it is with Canada.

Maine, the next neighbour of New Brunswick, grows daily in wealth and population. So is it with New York and Michigan, the next neighbours of Upper Canada.

New Brunswick and Canada enjoy the blessings of free trade. In Maine, New York, and Michigan, there exists that protective system—the “war upon labour and capital” so eloquently described by the late Secretary.

From the former men are daily flying. To the latter they are daily coming.

To those who desire to understand the causes of these extraordinary occurrences, we would recommend a perusal of the above passage from Lord Sydenham's letter. The British Possessions are subject to the colonial system, which has for its object the separation of the plough and the loom, the necessary consequence of which is the exhaustion of the land and its owner, whereas the people of this Union are still, even under the tariff of 1846, to some degree protected against that system.

The natural place for the loom and the anvil is by the side of the plough and the harrow. The whole object of the colonial system is to increase the distance between them; and the protective system, as it exists in this country, is but the result of an instinctive consciousness on the part of the agriculturists of the Union of the advantage to be derived from bringing the consumer to take his place by the side of the producer.

The Editors of “The Union” politely denounce our doctrines as “absurd theories.” We should be glad if they would explain why New Brunswick grows daily poorer under free trade, while Maine thrives under protection?

No reader of ordinary intelligence, need, we presume, be requested to note the immediate connection between questions like this and the condition and rights of the agriculturists of a country, especially in one like ours, where men exercising, or seeking to exercise, a controlling influence over its legislation, are perpetually extolling the benefits of what they call “free trade,” and its influence in advancing *the cause of civilization!* It is to invite the farmer and planter to examine such questions, and to think for himself, instead of pinning his faith on the sleeve of *party demagogues*, that we have sought to ESTABLISH this work. For the advocates of free trade, such as is enjoyed by New Brunswick, to content themselves with denouncing our arguments as “absurdities,” may be much more expedient than polite or satisfactory to impartial inquirers after truth—by whom alone, of *whatever party*, we have any ambition to be read.

A SUGGESTION FOR AGRICULTURAL CLUBS.

THE “New York Columbian Farmer” suggests what is, one might suppose, not only wise, but very practicable for all who have the self-command and resolution to *do any thing* for improvement in their line of business. It says:

Let each member of the club procure a good-sized blank book; commence, say in the spring; write down all matters which relate to the operations of the farm, viz.: number of acres, the soil, manner of tillage, quantity and kind of manure; the time of seeding of all kinds of grain and vegetables, quantity of seed per acre; the situation of the land, as to wet or dry; making suitable entries during the season, as to the weather, the growth of crops, whether doing well or not, and the probable cause; the time of harvesting, yield per acre; if good or poor, the probable cause; the time of selling, the price, if high or low. A memorandum somewhat similar, as to the stock; the disease with which they are attacked, if any, the remedy used, and the effect. Let an exact account be kept of the outgoes and incomes, and a balance be struck at the end of each year; taking special pains through the year to ascertain causes and their effects; and be not afraid of writing too much. By this course they would soon acquire the habit of putting their thoughts on paper in a systematic and by no means unimportant, one of the wants of agriculture, which we doubt not, when he can get time to look around, will command the attention of the Secretary of the Interior. We hope to see a watchfulness over the demands of agriculture, so far as it lies within the functions of his office, distinguish, as we doubt not it will do, his administration of the Home Department—and to what public purpose,

THE CUCKOO.

PERHAPS few birds have excited more curiosity among naturalists than the cuckoo, and some rather contradictory accounts have from time to time been published respecting it. Dr. Jenner was the first who threw any light on the natural history of this extraordinary bird; and his account is interesting and satisfactory. The fact of the young cuckoo turning out its weaker companions, the natural inmates of the nest, is now undisputed. This operation is, I believe, generally performed on the second day after the birds are hatched,—at least, I have found it to be so in the cases which have come under my own observation. The young intruder seems to confine his attack upon his nestling companions to the act of discharging them from the nest. In one instance, which I had an opportunity of observing, the young birds, which had only been hatched two days, were so little hurt by a fall of four feet from the nest to the ground, that two of them contrived to crawl a distance of eight or nine feet from the place on which they had fallen. Sometimes the young cuckoo is hatched before the other birds; in which case he proceeds to discard the eggs, which he is enabled to do by means of a depression in the middle of his back. It seems, however, to have escaped the notice of those to whom we are most indebted for the information we already possess regarding the habits of the cuckoo, that the parent bird, in depositing her egg, will herself sometimes undertake the task of removing the eggs of those birds in whose nest she is pleased to place her own. I say sometimes, because I am aware that it is not always the case; and indeed I have only one fact to bring forward in support of the assertion; it is, however, connected with another relating to the cuckoo, not a little curious. The circumstances occurred at Arbury, in Warwickshire, the seat of Francis Newdigate, Esq., and was witnessed by several persons residing in his house. The following particulars were written down at the time by a lady, who bestowed much time in watching the young cuckoo:—"In the early part of the summer of 1828, a cuckoo, having previously turned out the eggs from a water-wagtail's nest, which was built in a small hole in a garden-wall at Arbury, deposited her own egg in their place. When the egg was hatched, the young intruder was fed by the water-wagtails, till he became too bulky for his confined and narrow quarters, and in a *fidgety* fit he fell to the ground. In this predicament he was found by the gardener, who picked him up,

and put him into a wire-cage, which was placed on the top of a wall, not far from the place of his birth. Here it was expected that the wagtails would have followed their supposititious offspring with food, to support it in its imprisonment—a mode of proceeding which would have had nothing very uncommon to recommend it to notice. But the odd part of the story is, that the bird which hatched the cuckoo never came near it; but her place was supplied by a hedge-sparrow, who performed her part diligently and punctually, by bringing food at very short intervals from morning till evening, till its uncouth foster-child grew large, and became full-feathered, when it was suffered to escape, and was seen no more: gone, perhaps, to the country to which he migrates, to tell his kindred cuckoos (if he was as ungrateful as he was ugly when I saw him in the nest) what fools hedge-sparrows and water-wagtails are in England. It may possibly be suggested, that a mistake has been made with regard to the sort of bird which hatched the cuckoo, and that the same bird which fed it, namely, the hedge-sparrow, hatched the egg. If this had been the case, there would have been nothing extraordinary in the circumstance; but the wagtail was too often seen on her nest, both before the egg was hatched, and afterwards, feeding the young bird, to leave room for any skepticism on that point; and the sparrow was seen feeding it in the cage afterwards by many members of the family daily."

Spurzheim asserts in his lectures, that he actually saw an instance of a cuckoo having dropped her egg near a nest so placed that she herself could not possibly gain admittance to it: and that after removing the eggs which were already in the nest, she took up her own egg in one of her feet, and in that way placed it in it.

A gentleman in Sussex fired at a bird sitting on a fir tree in his garden, which he took for a hawk, and it fell with a broken wing. On picking it up, it proved to be a cuckoo, and being in beautiful plumage, and very lively, he tied up the wing, and sent it to a friend at Chichester, who, captivated by the bird's quiet demeanour, determined to undertake its cure. On being put into a cage, the bird soon fed, and appeared perfectly reconciled to its loss of freedom. It ate fresh meat of any sort, cut small and mixed with bread scalded and broken, and a raw egg. On this diet the bird did well for three months. At this time a lad brought some yellow-hammer's eggs, intending them as a treat, one of which the bird unexpect-

over. His retreat, however, being discovered, he was driven from it and killed. Another fox selected a magpie's nest as a place of retreat, and was discovered in consequence of a labouring man having observed a quantity of bones, feathers of birds, &c., on the ground under the nest. The following fact may be relied upon, extraordinary as it may appear. I received it from a gentleman of the strictest veracity, and who communicated it to me very recently, on his return from the South of France. A friend of his, with whom he passed much of his time there, was in the habit of shooting in a part of the country where there was much wild and rocky ground. Part of this rocky ground was on the side of a very high hill, which was not accessible for a sportsman, and from which both hares and foxes took their way in the evening to the plain below. There were two channels or gullies made by the rains, leading from the rocks to the lower ground. Near one of these channels, the sportsman in question, and his attendant, stationed themselves one evening in hopes of being able to shoot some hares. They had not been there long, when they observed a fox coming down the gully, and followed by another. After playing together for a little time, one of the foxes concealed himself under a large stone or rock, which was at the bottom of the channel, and the other returned to the rocks. He soon, however, came back chasing a hare before him. As the hare was passing the stone where the first fox had concealed himself, he tried to seize her by a sudden spring, but missed his aim. The chasing fox then came up, and finding that his expected prey had escaped, through the want of skill in his associate, he fell upon him, and they both fought with so much animosity, that the parties who had been watching their proceedings came up and destroyed them both.

Pontoppidan informs us, that when a fox observes an otter go into the water to fish,

he will frequently hide himself behind a stone; and when the otter comes to shore with his prey, will make such a spring upon him, that the affrighted animal runs off, and leaves his booty behind. Mr. Bingley quotes this anecdote, but without giving much credit to it.

In Smith's Directory for destroying vermin, we find it said that the fox exhibits a great degree of cunning in digging young rabbits out of their burrows. He does not try to enter the hole; for in this case he would not only have to enlarge it, but have also to dig several feet along the ground, under the surface of the earth; but he follows their scent above, till he comes to the end, where they lie; and then scratching up the earth, descends immediately upon them, and devours them.

Buffon considered that the fox ought to be placed among the higher order of quadrupeds, from the great care and dexterity they show in the construction of their habitations. Some of them are placed in extraordinary situations, a fox having been known to let himself drop from the edge of a precipice on a projecting piece of rock just below it, from which he got into his hole or den. These dens are sometimes provided with outlets, by which the fox may effect his escape.

Buffon says that foxes are so fond of honey, that they will sometimes attack bee-hives, and even the nests of wasps, and that they frequently meet with so rough a reception as to be obliged to roll themselves on the ground, to get rid of the insects that are stinging them. They then return to the charge, and generally succeed in securing the combs. I have, however, kept bees where there were many foxes in the neighbourhood, who could have gained access to my hives without any difficulty, and I never had reason to suspect that they in any way molested them, nor did I ever hear of an instance of this having happened in this country.

MANUAL OF MANNERS.

OCCUPATION OF TIME.

THE proper use of time is so essential to human happiness, that it is only surprising how it can ever be neglected. It is with time, however, as it is with health, generally abused, and too often sacrificed, through our own imprudence and folly. However numerous our avocations are, time, if properly cultivated, will afford leisure for them all; regularity and punctuality being sufficient to prevent our being hurried in any.

Economy as relates to time forms as im-

portant a subject for study as it does in money matters. Time is the most valuable estate which any one can possess; and, if skilfully put to use, will yield returns a hundred and a thousand fold. The disposal of your time ought, therefore, to be your first object; and when this is carefully arranged, all your pursuits and engagements will go on as naturally and as smoothly as if impelled by machinery.

The Chancellor d'Aguesseau, who died in 1751, was one of those persons who know

the value of time, and neglect no opportunity of improving it. Madame de Genlis relates of him the following anecdote:—"Observing that Madame d'Agneseau always delayed ten or twelve minutes before she came down to dinner, he composed a work entirely in this time, in order not to lose an instant: the result was, at the end of fifteen years, a book in three large volumes quarto, which has gone through several editions, and is much esteemed." Madame de Genlis does not mention the title of the work, but the anecdote is an interesting one.

It is strange that there should be such a strong inclination on the part of men and women—reasonable and responsible beings as they are—to idle away their time in frivolous employments, and disregard the warning which every hour, as it flies past for ever, affords them. The great desire with many is to "kill time;" forgetting, alas, that in dissipating away, vainly and fruitlessly, the precious days and seasons allotted to us, we are only taking from ourselves "the means by which we live," and throwing among the irrecoverable treasures of the past, the hours we received to bless and enliven the present, and render pleasing and useful the future!

Time is the thoroughfare through which we pass to eternity; and every Christian moralist, in writing upon the subject, must endeavour to impress this great truth upon the minds of his readers. How assiduous, therefore, must we all be so to occupy our time as not to be found among those who, in destroying it, have destroyed also their own hopes of eternal happiness! Every passing-bell that tolls reminds us of another pilgrim having been called home; every funeral pageant that we pass tells us of another sinner gone to his account.

Every person who has a due regard to his own comfort and moral and social advancement should consider how, in the proper occupation of his time, he can best dispose of it to advantage, apportioning his hours without losing any, and arranging his occupations without allowing the one to interfere with the other;—giving so much time to devotion, so much to business, so much to study, so much to reading, so much to recreation, so much to seeing friends, so much to the other duties of life, and so much to sleep! The latter ought, on no account, to be prolonged.

Industry is a great help to genius. This truth knew Sir William Jones, who, by never losing a minute that he could turn to useful account, acquired more languages than almost any other man living. Of Sir Edward Coke's distich on time he had a high idea—

"Six hours in sleep, to law's grave study six,
Four spend in prayer—the rest on Nature fix:"
which he altered to the better:

"Six hours to law, to soothing slumber seven,—
Ten to the world allot, and *all* to Heaven."

The late Jeremy Bentham, it is recorded, was a great economist of time. He knew the value of minutes. The disposal of his hours, both of labour and of repose, was with him a matter of systematic arrangement.

An hour in the morning may be said to be worth two in the day. The senses are then refreshed, the understanding unclouded, and the imagination active. Many of our best writers have chosen the morning as the time for composition. As regards reading, no other period of the day is more appropriate, or, usually, more unoccupied.

BUSINESS CORRESPONDENCE.

EVEN in matters of business, politeness should not be altogether overlooked, nor courtesy disregarded. The tradesman who writes his orders in a peremptory tone, or issues his commands in a haughty and insulting manner, will be treated with contemptuous neglect; while he, whose conduct proves that the gentleman is not necessarily merged in the merchant or shopkeeper, will be sure to have his wishes studied, and his orders obeyed, with a degree of attention and respect which is denied to the discontented and uncivil person, who is despised for his pride and arrogance. Instances of this occur in every one's experience, and we need not dwell upon it here, as one's own good sense and practical knowledge of the usages of the world ought to teach him how to conduct himself to his correspondents.

Courtesy never loses any thing; but, on the contrary, is always a gainer; and it ought to be introduced in business as a profitable part of the means of trade, if it does not exist naturally in the manners; that is, if a man's good feeling does not prompt him to be polite, his self-interest ought to make him so.

We need not add, what is so well known to every real man of business, that correspondence ought to be systematically conducted—every letter promptly and punctually answered—and every order, as soon as possible, completed and despatched. Method and punctuality are the mainsprings of business; and the correspondence of a person engaged in trade ought to be conducted with the same regularity and attention that he bestows on his books or his accounts; for on this, as much as on any thing else, in a great measure, depends the secret of a successful business.

The Plough, the Loom, and the Anvil.

VOL. II.

AUGUST, 1849.

No. II.

From the Cumberland [Maryland] Civilian.

ON THE BEST MEANS OF BRINGING INTO ACTIVITY THE RESOURCES OF CUMBERLAND AND ITS VICINITY.

Letter to COL. C. M. THRUSTON, from J. S. SKINNER, Editor of "*The Plough, the Loom, and the Anvil.*"

Cumberland, June 28, 1848.

MY DEAR SIR:—Without attempting appropriate acknowledgments for your hospitable reception and entertainment pending the late Convention of enlightened citizens interested in the vast resources that characterize this favoured region; the only return I can offer, poor as that may be, is, to submit—and that only in strict reference to the agricultural interests involved—such reflections as occur to me on the *obligations of the government* to promote the practical development and use of these resources; and here, sir, it may be asked at once—For what purpose did a munificent Providence bestow such a rare union of all the powers and elements for manufacturing industry of every sort—elements of all the arts and comforts that distinguish civilized from savage life?

It is not to be denied that in the very beginning of every great industrial purpose, the question presents itself as to the *cost of fuel* to be employed in its execution. A modern writer, distinguished for his profound inquiries on these subjects, says—in the present condition of the arts, it may almost universally be considered, that, directly or indirectly, the changes which are to be produced, whether in composition or in form, in the raw materials of any manufacture, are effected by the *operation of heat*. If we look to any of the various chemical or metallurgic arts, we find the agency of heat necessary to liquefy the substances employed, so that they may be run into moulds, or separated from infusible components; to effect their perfect mixture, or to bring into play those chemical affinities by which their constitution may be altered, and new and more valuable products formed. Hence it is impossible to carry on those branches of industry in localities destitute of fuel: and where this is scarce and high priced, the cost of production of the manufactured article may be so augmented as to absorb all profit, and render the prosecution of that trade only a source of loss. In a similar manner, although not in the same degree, the mechanical arts are influenced by the cost of fuel. In localities where water-power is not available, it is necessary to employ *steam*. To produce any given motion, to spin a certain weight of cotton, or weave any quantity of wool or flax, there is required steam; to produce the steam, fuel; and thus *the price of fuel regulates effectively the cost of mechanical power*. Abundance and cheapness of fuel are hence main ingredients in industrial success. It is for this reason that in England the active manufacturing districts mark, almost with geological accuracy, the limits of the coal-fields. And do not these elements, with which you are here surrounded in such profusion, and this experience of the greatest manufacturing people in the world, indicate, as with the finger of God himself, that here, too should great manufacturing establishments arise?

But the first question is, how are your great natural resources to be brought into play anywhere—what policy will best develope them? As one of the humblest organs of the agricultural interest, I am more anxious to know, for it never yet happened that a nation exclusively agricultural ever was distinguished for wealth and greatness.

Would it not, then, be an impious impeachment of the wisdom of Providence, to say that these great treasures were to remain to all eternity locked up in the bosom of your mountains, and may not that policy which would preclude the development and use of them, be regarded as a monstrous perversion of the obvious designs of nature? Nay, does not such a policy fly in the very face of nature, bearing on its own front, not only the stamp of folly, but the more hideous aspect of black ingratitude? "God," saith the wise man, "has made man upright, but he hath sought out many inventions;" and does not that seem to be a crooked and mischievous political invention, that would lead us to turn our backs upon such resources of wealth and power, and to go to foreign countries for coal and iron, which, when they come, represent almost exclusively the agricultural products of other countries, consumed in their production; instead of procuring them at home, where their value would be made up of the produce of American ploughs and harrows?

Nothing, you may be assured, sir, can be further from my wish or purpose, than to contemplate in the narrow and murky aspect of a party question this or any other industrial problem which my position and duties lead me to study in the course of my labours to promote the agricultural interest. Except as it concerns the cultivators of the soil, it concerns not me the value of a bushel of coal or a pig of iron, what party is in the ascendant for the hour or the day, the week or the year. What you, what we all desire to know is, what measures of individual enterprise, favoured by a wise policy of government, will most fully and profitably bring into play the prodigious resources which lie here unemployed in the bowels of the Alleghanies, in such manner as will best conduce to the true and legitimate ends of all good government, the general prosperity of the country. On that point I come now to speak, hoping not, as I desire not, to do the least injustice or give the least umbrage even to the prejudices of candid men in the honest pursuit of truth, which every honest inquirer is bound to follow, wherever it may lead.

In my humble judgment, we have too often, lately, seen the worthy followers of various branches of industry falling into the grave error of holding conventions—not to see how *consumption can be increased*, but how *production may be diminished*! The policy that takes that direction, always goes from bad to worse, for though a man may abuse a good appetite, what should we say of the doctor who would seek to cure him by depriving him at once both of appetite and food, and so starve him to death in the way of relief?

Thus the owners of coal mines in Pennsylvania have had meetings to restrain the production of coal within the limits of consumption, and the wool-growers too of Pennsylvania, and Ohio, have had meetings for a similar purpose in reference to their great staple.

But a little while since, the planters of the South had a meeting, and appointed a committee, with instructions to endeavour to devise means for restraining the growth of cotton within the limits of consumption, and thus save them from impending ruin; and throughout the planting States, the papers are now filled with recommendations to substitute the cultivation of food for that of cotton, the price of the latter having fallen below the cost of

production. The farmers, on the other hand, disappointed of the great demand promised them in Europe, are storing up their grain, with a view to restrain the supply within the limits of consumption, and thus enable them to maintain the price until some new potato-rot or other calamity shall enable them to obtain a market abroad in lieu of that at home, of which they have been deprived. The iron-master closes his furnace and his rolling-mill, in hopes of reducing the supply within the limits of demand. The coal men of Pennsylvania but recently stopped work for about two months, hoping to reduce the supply within the limits of demand. Woollen and cotton mills are closed because the supply of cloth exceeds the demand. Machine-shops and paper-mills are closed, or working with diminished force, because the supply of machinery and of paper is in excess of the demand. Similar phenomena present themselves to view in every direction throughout the Union. There is too much of all the good things needed for the support and comfort of man, and for his improvement physical and mental—too much of all those good things for which men are willing to labour; so much, indeed, that everywhere men are combining for the purpose of diminishing the supply: and yet at no period during the last six years has the labourer found it so difficult to exchange his labour for food, clothing, or furniture, or for the machinery of production by aid of which to enable him to obtain larger supplies of those good things. Labour is superabundant, and the labourer cannot earn wages to enable him to purchase food, or clothing, or iron, or paper, the consequence of which is that food and clothing, and iron and paper, are also superabundant. Is there not within your observation a great redundancy of labourers now, in and about Cumberland, vainly seeking employment, that, if they could find it, would be good and willing customers to the farmer and the horticulturist?

We desire to keep down the supply of fuel, one of the great necessities of life, lest we may not be able to obtain for it as much food and cloth as is needed for the maintenance and comfort of those who produce the fuel. The men who produce food and wool desire to keep down the supply of those essential articles, lest they should not be able to obtain in exchange therefor as much fuel, or iron, or clothing, as is needed to supply their wants: and the producers of cloth store away their products, because they cannot obtain in exchange for them the same quantity of food, and wool, and iron, that has been expended in their production, and would be needed for their reproduction. Such, my friends, is the spectacle presented to view throughout the Union, in this year of our Lord, one thousand eight hundred and forty-nine, at the close of the third year of the revenue tariff of 1846, under whose "benign influence" labour and capital were to be emancipated from the thralldom imposed upon them by the tariff of 1842.

Three years since, how different was the spectacle presented to our view! Then, men were everywhere seen meeting together for the purpose of combining their exertions for the increase of production; and *the more it grew the faster was the ratio of increase*, and the more it had continued to grow, the faster would have been that ratio. The consumption of anthracite coal had grown from one to almost three millions of tons, and because of the increase in the quantity required to meet the demand, the producers were enabled to send it to market more cheaply, enabling the consumer to apply more of his wages to the purchase of food and clothing, and giving to the farmer an immense market *not only among miners but also among miners' customers*. The consumption of iron had grown from less than 400,000 to 750,000 tons, and the men who mined and smelted the ore consumed largely of food and cotton, while the rapid increase in the means of transportation enabled the producer of food and cotton to send them to market at a constantly decreasing cost of labour and manure. The cotton manufacture had

grown from 300,000 bales to more than half a million, and the men, the women, and the children, who spun the wool and wove the cloth, were enabled to consume largely of food and clothing. The coal men, the iron men, the cloth men, and the paper men, were consuming food, and timber, and bricks, and stone, and iron ore, and all other of the products of the land, and the owners of land, and the producers of food and of the materials of clothing, were thus enabled to consume largely of cloth and paper, and iron, and all other of the commodities required for the maintenance and improvement of their condition. Thus was made a market on the land for the products of the land, to an amount exceeding that of 1842 by more than a hundred millions of dollars in a single year, and that market was due to the existence of the tariff of 1842.

Men were then everywhere combining their efforts for the purpose of rendering their labour more productive, and consequently more valuable, and so successful were their efforts that not only were they enabled to consume twice as much cloth and iron, and fuel, but they exported so largely that they were enabled to bring up the consumption of foreign merchandise to the standard of the years of the highest prosperity ever known in the Union. This, however, was not all. In addition thereto, they paid off much of the debt that had been incurred in the last four years of the compromise tariff, when mines, furnaces, and mills were closed because of the great diminution in the power of consumption that had been experienced under the free trade system.

"I was well, I would be better, and here I am," was the inscription upon the tomb of a man who undertook to doctor himself when in sound health, and paid the forfeit with his life, and such might now be the inscription upon the buried hopes of the farmers and planters of the Union, who united for the destruction of the tariff of 1842. They were "well," and they "would be better." They had enjoyed the *blessings* of free trade in 1840, '41, and '42, when food was almost valueless, because mines, furnaces, and mills had been closed, and their occupants—consumers of food—had been driven to the West, there to become producers of food. Just recovered therefrom, they placed their affairs in the keeping of men enamoured with the doctrines of free trade among *nations*, and who did not see that every attempt made in that direction had been attended with a diminished power of trading between *men and their fellow men*. Trade with foreign nations was almost free in 1841 and 1842, but never in the history of this country was trade among our own people so restricted. Men were then, as now, combining their efforts to diminish production, because consumption had been so vastly diminished, and with every diminution of production the power of consumption still further diminished, as is now being and ever will be the case. In defiance of experience, however, it was resolved to prostrate the system under which the nation had been resuscitated, and the tariff of 1842 was doomed to die. It was everywhere proclaimed that protection was "a war upon labour and capital," and tended to decrease, by "hundreds of millions" annually, the productive powers of the nation. The head of the Treasury Department was required to furnish a statement of the extent of taxation imposed by the system, and then was given to the world probably the most extraordinary document (by some said to be among the ablest) ever issued to the world by any man invested with the important powers and duties of such an office.

It was therein shown that upon certain protected articles, the whole people were taxed for the benefit of a certain small portion employed in producing those commodities, to the extent of ninety-five millions of dollars, while the amount of duties paid on them into the Treasury was but seventeen

millions. The manner in which this result was obtained is curious, and is strikingly illustrative of the want of practical knowledge possessed by the author of this important document, and which, in my humble judgment, too often distinguishes great politicians as well as men renowned for science in other departments.

The amount of pig-iron produced in the Union was first set down in the Report of the Secretary at 745,072 tons. Against this a tax of \$9 per ton was charged, that being at that time the duty thereon, and the amount of this *tax* was . \$6,705,468

Of this, 300,000 tons were stated to be converted into bars, and as the duty on bars was \$17 and \$25, *the larger* of these sums was selected to be charged as the *tax* paid on the whole, *in addition to the tax already paid on the pig*—say . 7,500,000

72,536 tons being converted into sheet, rod, and hoop iron, there was next charged, *in addition to the taxes already paid on the pigs and the bars*, \$56 per ton—say . 4,122,016

Of the pigs, 372,537 tons being converted into castings, upon which there was charged, *in addition to the tax already paid on the pigs*, \$56 to \$112 per ton—say . 20,862,017

Of the bars, a portion being converted into nails, and other hardware, upon which there was charged, *in addition to the taxes already paid, first on the pigs and then on the bars*, . 16,416,178

And thus we have a total *taxation* of . \$55,605,679

Being about \$75 per ton, or almost as much as the average price at which the whole quantity had been sold.

The Secretary thus proved clearly that the man who paid \$80 for a ton of castings, was taxed for the benefit of the persons engaged in its production, first, upon the pigs . \$9

And then upon the castings, from \$56 to \$112, the average being given at about . 60

The *tax* was therefore . \$69

And the true value of the castings only . 11

The unfortunate man who purchased nails, was, however, shown to be still worse treated. Paying \$100 for a ton, he blindly supposed that to be the price of the commodity he had purchased, but the Secretary proved that he was by that very act imposing upon himself a *tax* for the support of the maker of nails to the following enormous extent :

Tax on a ton of pigs . . .	\$9
Tax on a ton of bars . . .	25
Tax on a ton of nails . . .	60
Total tax	94

And thus the real value of the nails was reduced to six dollars.

The manner in which the consumers of coal were shown to be taxed was quite as extraordinary. The whole quantity produced was set down at 4,347,659 tons, and the taxation thereon at \$1.75, making a total of \$7,608,493. Thus the man who bought coal in Pittsburg at 4 cents per bushel, or in Wilkesbarre at \$1 per ton, was shown to be paying the enormous tax of \$1.75, being the sum that the domestic product was held by the Secretary to be *increased in price* by the existence of a protective tariff. It is true that he appeared to be somewhat uncertain if the whole amount of the duty were added to the price of the domestic article, (and well he might be so,) and

furnished his readers, in another column, figures of somewhat smaller dimensions, how obtained I know not. There the tax for the support of the producers of iron was reduced to about \$37,000,000; and that for the support of the producers of coal to \$6,869,000: being about a dollar and sixty cents per ton, or *more than the average price of all the coal sold at Pittsburg, Wilkesbarre, Pottsville, Mauch-Chunk, and Lackawanna.*

Taxation for the benefit of the few, and the consequent impoverishment of the many, were thus shown to be very great, and the remarkable part of it was, that both tended to increase as the people acquired the power to consume more of the commodities taxed. The more rapid the increase of wealth, the more roads would the people make, the more iron they would consume, the heavier would be the taxation, the greater the tendency to general impoverishment, and the greater the inability to pay for the commodities taxed. The power of the people to consume iron doubled under the protective system in a very short period, and the taxation was but 55 millions; but had they grown rich twice as fast, and been thus enabled to consume quadruple the quantity of iron, the taxation would have been shown by this report to be 110 millions, and the tendency to impoverishment twice as great. In 1842, when a large portion of the community was unemployed, and when production was therefore small, taxation, according to the Secretary's theory, was also small, and they *should* have grown rich, but they remained poor in spite of the theory. In 1846, when the tariff was to be reduced, and when everybody was employed, and production was large, consumption was larger, and therefore the Secretary was enabled to prove that the nation *ought* to grow poor, but it grew rich in defiance of all theories. Were the Secretary now to measure the amount of taxation, he would find it reduced, notwithstanding our great increase of population, for his doctrine has nearly closed the mines and furnaces, and rolling-mills, and cotton-mills, and woollen-mills of the Union, and thus effectually curtailed the power of consumption. It would, however, be difficult to prove that the people were being enriched by a system like the present, that renders it daily more and more difficult for the labourer to exchange his labour for food, cloth, or iron, as we see to be the case.

Erroneous as this statement now appears, it was put forward as truth, and with a gravity equal to that exhibited in the last report of the same officer, when claiming for his tariff all the results of the potato rot, the great railroad speculation of England, and the disturbances of Europe, by which the supply of grain from the Baltic had been cut off, thus leaving for our farmers an opening to send to the people of England a small amount of food, in part payment for the large quantities of food daily imported in the forms of cloth and iron. The farmers of the Union were told to see for themselves the enormous amount of taxation to which they were subjected, and to compare the situation of a man in Detroit with that of one on the opposite side of the river that separates it from Canada, who could purchase cloth and iron at one-fourth less price, because of the enjoyment of perfect freedom of trade. It appears, however, never to have entered the mind of the Secretary to ascertain whether or not the Canadian *could or could not consume as much cloth or iron as the man in Detroit.* Had he done so, he would have found that the power of consumption of the former was less by one-half than that of the latter, because, under the system of free trade with England, the consumer was unable to take his place by the side of the producer, the consequence of which was that the land and its owner were both being exhausted. Doing so, he might have understood why it was that land on the one side of the river, where cloth was highest, was worth four times as much as on the other, where cloth was lowest. He might then, too, have understood why it was that almost every labourer land-

ing in Canada—the land of perfect freedom of trade—desired to place himself in the United States, the land of comparative protection. He might have satisfied himself that free trade, low wages, and almost valueless land, were to be found associated in all the colonies of England. These things, however, were “not dreamt of in his philosophy.”

His tariff, urged on the planters and farmers as a means of enriching themselves, was adopted, and the result we are now witnessing. Iron, which two years since was worth in England from ten to thirteen pounds, is now worth five, and the iron-masters of the country find themselves ruined by circumstances that could not have been anticipated, and over which the nation has exercised no control.* Cotton and woollen mills have in a great measure ceased to be built. The consumers of coal are diminishing in number, and mines have ceased to be opened. The places at which the food, the wool, the coal, and the ore, were on the spot exchanged for the labour required for converting them into cloth or iron, are being closed. Exchanges are suspended between the labourer who produces food and wool, and the other labourer that desires to be a consumer of food and wool, and there is consequently a glut of all the commodities necessary for the support and for the enjoyment of man; and we see men seeking relief in conventions to reduce production, instead of uniting to increase the powers of consumption.

Food is superabundant, but the labourer finds increased difficulty in obtaining it, while the producer of food finds increased difficulty in obtaining cloth or iron. Coal is superabundant, but the labourer finds increased difficulty of obtaining fuel, because he cannot sell his labour. Iron is superabundant, yet the farmer finds increased difficulty in obtaining roads upon which to go to market. Cloth is superabundant, yet the farmer finds increased difficulty in converting his wool into cloth. Cotton is superabundant, yet the planter finds increased difficulty in converting it into food, or cloth, or iron—and all this because labour is superabundant and unproductive, and the labourer's power of consumption is reduced accordingly. The productiveness of labour is rapidly diminishing, and the productiveness of capital is as rapidly diminishing, by aid of a system that was to emancipate labour and capital from restrictions that the labourers and capitalists were told lessened by hundreds of millions the productive power of the Union.

The productiveness of labour is now far less than it was three years since, whereas it should have augmented, and would have done so, had the tariff of 1842 been permitted to remain. It is to this great fact that all these conventions are due. The power to consume coal and iron, and cloth and wool, and paper, diminishes instead of increasing, and there-

* In a New York paper, I have just seen the following statement, which speaks for itself, and which cannot be disputed :

“*Railroad Iron.*—This article is now sold in this city, of English manufacture, at about \$12 per ton, which is death and destruction to the American manufacturer and the American labourer, in the iron workshops.

“The mills now in operation only live on their old contracts, making iron ordered long ago, as in the case of the Hudson River Railroad, whose rails the Trenton and Boonton mills are making at \$37 50 per ton. This is a difference of \$25 per ton; and when the contract was made, it was made as low as the mills could afford it, or the company could get it; but the difference shows what ruin the Tariff of 1846 is creating for American labour and American ore.

“To be independent, a nation must not only make its sword, but have within its bosom the material of which it is made, and of that material make it. To be riding eternally on rails made in British workshops, and by British hands, is but little better than living on British laws and under British customs; and surely it is paying Britain the highest tax and the highest compliment.”

fore it is that men are everywhere combining to diminish the supply of all those good things. Of one thing, and one only, the production increases and that is food. Every man that is driven from the mines, and furnaces and mills, endeavours to seek the West, there to produce food, and to become a rival to the farmer and the planter. The new States are growing with unexampled rapidity, and every man settled therein becomes at once a competitor with the farmer of the old ones.

Over *two thousand* passengers are stated to have disembarked at Milwaukee in eight days of the month of May last. The positive increase thereby of the population of Wisconsin can hardly fall short of *fifteen hundred*. One thousand more are said to have landed during the same period at Green Bay, Southport, and Racine. The number added to this young State by immigration is estimated at sixty thousand per annum—which the natural increase must swell to one hundred thousand. And, let the farmers of the old States mark it well, all these are to become competitors with them, when a large portion of them might have been kept here in the old States as customers, working up coal and iron, and cotton and wool.

What we need, sir, as it seems to me, is combination to increase consumption, and not to diminish production. Every step in the one direction is attended with constantly accelerated growth of power, while every step in the other is attended with an effect directly the reverse. The more that is produced, the more rapidly capital is accumulated, and the more rapid is the growth of the power of production and consumption. The tariff of 1842 was a law for promoting the power of combining for the purpose of exchanging labour and food, and wool, and lumber, and stone, for cloth and iron. Its object was that of enabling labour and capital to combine for rendering productive every species of property, whether that of the small owner of twenty acres of land, or that of the great proprietor of extensive plantations—the little owner of a horse and cart, or the great proprietor of a rolling-mill or foundery—and it did its work effectually, doubling the power of farmers and labourers to consume cloth and iron. That of 1846 is a law for preventing men from combining their efforts, and for diminishing the power to exchange labour for all the good things that the labourer—agricultural or manufacturing—needs. It is a law for deteriorating his condition, and *it is doing its work effectually*. Let the former be restored substantially, and let specific be substituted for *ad valorem* duties, and the power of consumption will be restored. Exchanges will then again recommence. Mills and furnaces will then be built, and mines will be opened, and houses for workmen will be needed—and labour will cease to be surplus, and then food and cotton, and wool and cloth, and coal and iron, will cease to be so, for of all of them there will be increased capacity of consumption. The restoration of that law would produce an universal demand for labour, and wages would rise, and men would then be seen everywhere combining for the purpose of increasing production, instead of, as now, combining for its diminution.

To that great object should all your efforts be directed. Every man among us should endeavour to diffuse among his friends and neighbours the information that is needed to make them understand the causes of the existing paralysis—of the wonderful change that is exhibited throughout the country. Let each and all of us do this, and the time cannot be far distant when we will see the substantial and permanent re-adoption of the system under which we doubled our consumption of iron and cloth in the short period of four years, and paid off a large portion of our debts abroad, widely different from the present one, when our consumption of both is stationary, and when our power to import foreign cloth and

iron is maintained only by the daily contraction of huge debts, entailing upon us a perpetual demand for the payment of interest. To the Compromise Bill were due the bankruptcy of Pennsylvania and Maryland, the repudiation of Mississippi, and the disgrace of seeing the securities of the Union hawked through the markets of Europe, without finding purchasers. To the tariff of 1842—brief as was its existence—are due the restoration of public credit, and the fact that throughout Europe men are everywhere seeking the securities before so much despised.

On this one question, which so vitally concerns all, and especially the Farmer and the Planter, let us be for once united. Let us keep this one subject free from the over-heated arena of party strife. Say to politicians, of whatever name or caste; dispute and scuffle as you will for the high places of power and patronage, but let the public policy be so shaped as to develope and bring into practical use and enjoyment the great resources, with which an All-wise and fore-casting Providence has enriched our country. Unlike other nations, restricted in extent, in climate, and in capacity to produce and manufacture all that is essential to national independence; we have them all within the almost limitless expanse of our own domains. As our position is peculiar and our own inherent capabilities unlimited, let our public policy correspond with our position and our means. Let us delve our own coal and forge our own iron. To neglect them would be to forsake our own and to go in search of strange gods. Instead of sending our cotton to the looms of Manchester, and our wool to the looms of Leeds, let us force the looms to come to the cotton and the wool. Instead then of importing millions of the products of European agriculture in the shape of cloth and iron—the weavers of cloth and the manufacturers of iron will be drawn here to consume the wool of our flocks and the grain of our fields. Then, in a word, the loom and the anvil will take their natural place in social and thriving proximity to the plough; and, as advised by Jefferson and Jackson, the manufacturer will take his place by the side of the agriculturist.

Truly yours,

J. S. SKINNER.

PRICES OF WHEAT.

AGGREGATE average prices of wheat for the last weeks in December, for the last seven years, from 1842 to 1848, inclusive, in fifteen of the principal manufacturing districts, and fifteen of the commercial towns in England:

Years.	Agricultural towns.		Manufacturing towns.	
	s.	d.	s.	d.
1842 . . .	48	0	46	10
1843 . . .	50	3	50	5
1844 . . .	45	11	45	10
1845 . . .	56	3	55	4
1846 . . .	63	3	62	9
1847 . . .	53	6	55	3
1848 . . .	47	1	48	4

The fifteen agricultural towns chosen for the above averages are—Guildford, Ipswich, Canterbury, Woodbridge, Lincoln, York, Morpeth, Northampton, Newark, Gloucester, Chelmsford, Colchester, Royston, Bury, and Taunton.

The manufacturing and commercial—Leeds, Sheffield, Hull, Manchester, Birmingham, Leicester, Nottingham, Derby, Norwich, Wakefield, Newcastle, Worcester, Coventry, Bristol, and Liverpool.—*English Paper.*

LECTURE ON AGRICULTURAL CHEMISTRY.

PUBLIC SENTIMENT AS TO AGRICULTURE—WHO ARE THE REAL PROMOTERS OF ITS IMPROVEMENT?—WHO ARE THE “PRACTICAL MEN” AND WHO NOT—BALTIMORE ATHENÆUM, ETC.

WHEN we commenced, more than thirty years ago, the systematic collection and diffusion of agricultural knowledge, through the medium of a regular periodical, with a view not only to practical improvement, but to a higher and more just conception of *the art of cultivation*, as such, what we then ventured to anticipate was chiefly the establishment of a central and convenient repository—the construction, as we may say, of a tank, in which to collect the *experience* of observant men, willing and able to communicate the results of personal observation and practice in the field, to be thence redistributed more widely and equally over the land. We hardly dared, in the beginning and in the then state of public feeling and knowledge, contemplate, much less call attention to agriculture *in its connection with the sciences*, which now so well serve by experiment and analysis to demonstrate the philosophical principles that belong as well to agriculture as to astronomy or mechanics, or any of the other arts or professions, generally esteemed so much more learned and dignified.

Gradually, and fortunately for the success and the honour of this greatest of all professions, a change has come over the spirit of the public dream, and the most practical men are no longer seen to startle or sneer at the suggestion of a natural connection between the sciences and the plough!—and moreover, we venture to say that the nearer and the more numerous and prosperous are the weaver and the smith, the tanner and the shoemaker, the saddler and the hatter, to those who are using the plough and the rake, the hoe and the harrow, the *more scientific and prolific will agriculture become*. Yes, reader, after all, you must have the remunerating market near at hand to stimulate to improvements in every thing. You must not expect that the comparative advantage of rich lands in new States, over poor land in the old States, is to be overcome and made up, by the application of science to agriculture in the latter; for science is a light, portable thing, and easily transports itself to any point where it can be sure of reward, and thus you must not expect to use its light, and keep it hid from those who have richer lands in new States. Its benefits will be as accessible to them as to you, and the sciences which teach you how to *restore* will teach them how to *preserve*. Hence the remedy for the evils that afflict an exhausted country, is first to provide itself with customers, by forcing or seducing those who are not producers, to come as near as possible to those who are. It is population that makes poor land rich, and that substitutes light for darkness, and paves the way for improvement. Hence it is that science is employing steam in so many forms and with so much effect for mechanics and merchants more than for planters and farmers. Speaking with the advantage of some little experience, were we called upon to say what *classes* of people are most indifferent to the spread of light that may reflect its rays on the course of the plough and the harrow, ensuring them at once more productiveness and more honour, we would designate, for the information of the farmer and the planter, his *representative* or *law-maker*, and his *commercial agent*. Yes, we verily believe that, take any journal designed exclusively to secure knowledge and profit and dignity to agriculture, and the proprietor may expect more encouragement from the same number of respectable mechanics, or lawyers, or doctors, or any other *class* of people, than from state legis-

lators, members of Congress, or commission merchants. We have tried it, and may say, thus have we found it—we speak not without experience. Members of Congress will very freely *vote* books—especially *military* books—no matter how costly, to themselves and their constituents, at the public expense, but ask them to subscribe on their own account!

In a certain great city of monuments, to which we are attached by so many endearing associations, there is a building whose purposes and arrangements do imperishable honour to its inhabitants. We sometimes, *en passant*, step in for the sake of enjoying the reflection—here is an institution that does more credit to the city in its enlightened and beneficent aims, than all its perishable monuments of stone and mortar. In separate apartments of this building are three different libraries, devoted to historical, to literary, and to commercial researches and knowledge. Now what we mean to note (and that in no spiteful spirit, but the contrary) as to the latter company is, its refusal to add to its collection the six volumes of “THE FARMERS’ LIBRARY,” containing in three of them, the five volumes (English copy) of “*Von Thaer’s Principles of Agriculture*,” and “*Stephens’s Book of the Farm*,” and “*Petzhold’s Lectures on Agricultural Chemistry*,” which alone—we mean the English copies—have lately, and within our knowledge, sold in this country for \$47, while they were offered these and three volumes besides—American reprint—with many costly and coloured engravings, for \$12. We only mention it as a matter of taste and discrimination on the part of the directors, to whose better judgment we are bound to defer. As to the appropriateness of such works, at once philosophical and practical to such an institution, we would only ask—Whence does commerce derive its elements except from the lands and the labours of the agriculturist? Without them, how could she lay a keel, or fill the hold, or spread a sail? What is the province of the merchant, but as a go-between—a mere exchanger of the fruits of the more productive industry of the farmer and the mechanic? Does it not import every young man, then, who aspires to the character of the merchant in an enlarged and liberal sense, to make himself acquainted not only with the natural and artificial products of every clime, but with the general principles and processes followed in their production? Are not such scientific and practical works, therefore, more worthy of a place in such a library than the *trashy novels* which make up, in very large proportion of number, the “LIBRARY” of a certain *American Institute*?

We are not doubting the value and the fitness of the works in the library to which we are here alluding. Far from it; and heartily do we wish it were in our power to contribute largely to its catalogue; but at present the most pressing question with us is the *bread question*! Nevertheless, we shall have some trifles to offer, when we can get time to pack them up, for the Historical Department in the same building, under the auspices of the gentlemanly scholar who favours it with his presidency.

Well, here have we spun a long yarn, when we only intended a line or two of introduction to the following *Lecture*, which of itself, had it been read by the Legislature of Virginia, might have prevailed with them to appoint an Agricultural Chemistry Lecturer—that is (which is not as easy as some may suppose) if they could have made sure of *finding a competent man*—for such a man would deserve not less than \$3000 a year, with some assurance of permanence to his employment; but in our wise republican country, this last advantage is reserved only for those whose *trade is war*!

But let us to the *lecture*, which we commend particularly to those who maintain that knowledge in agriculture can only be gained from “practical men,” and that none are practical men except such as wear hob-nails in their shoes, dirty smock-frocks, and hands of horn.—

LECTURE ON AGRICULTURAL CHEMISTRY, AT SAXMUNDHAM, SUFFOLK.

BY J. C. NESBIT, ESQ., F.G.S., F.C.S., ETC.

On Thursday evening, Jan. 4, a gratuitous lecture was delivered by the above gentleman, in the new Market Hall, of Saxmundham, Suffolk, to between 300 and 400 of the farmers and other residents of the neighbourhood, the former constituting probably nine-tenths of the assembly. The occasion was one of unusual interest, and the attention of the meeting, having been secured at the outset, was exhibited throughout. The chair was taken by W. Long, Esq., of Herts Hall, to whom the agriculturists of the district are indebted for the erection of the handsome building in which so many of them assembled on the evening in question.

The chairman having introduced the lecturer as a gentleman who was connected with the agricultural and scientific school of Kennington, London,

Mr. NESBIT spoke as follows: Mr. Chairman and gentlemen, I feel very highly gratified at seeing such a numerous assemblage of gentlemen interested in the progress of agriculture; and I shall feel very great satisfaction this evening, in endeavouring, as far as I possibly can, to elucidate the science of agriculture with reference to the application of chemistry to its development. I am not come down to you with a vast amount of chemical apparatus; I have not brought here a prodigious number of curious things of which you might have wondered what was their use. I come to you this evening with the language of plain common sense; and with the operations which you are continually performing on your farms as the basis of my arguments, I shall see if I cannot, by applying to them the rules of plain common sense, elucidate the subject, and secure to you a greater knowledge of the *science* of agriculture than you already possess. Before doing this, however, I must make one or two observations. And gentlemen, I must, in fact, quarrel with you, because you arrogate to yourselves alone, what I think you ought not to claim for yourselves alone—the title of *practical men*. “We, we, we,” you say, “are the practical men,” as if there were no other practical men in the kingdom besides yourselves, and as if no one else understood the nature of things. Now, I mean to contend that the title “practical” does not belong to the farmer alone; and I have certainly some doubt whether it ought to be applied to the farmer at all, in its full signification. I will take, for example, the case of Mr. Tomkins, who is a capital farmer. He farms his land well; he keeps stock, and grows turnips, and does every thing in the best manner. Now, as a poor student in science, I want to gain from this gentleman some useful practical information. With this object in view, I say to Mr. Tomkins, “Pray, what have you got in your soil—what are its properties?” He replies that it is a sandy soil, a loamy soil, or a clay soil. “Yes; but what have you got in the one and what in the other?” “I don’t know; I have not gone so far as that yet.” I then ask, “What have you got in your manure?” and Mr. Tomkins, good, easy, practical man as he is, says, “I cannot tell you.” If I ask him what his crops take out of the land, again he declares that he cannot answer my question; he knows that they take away something; he knows that if he sows wheat, barley, or any thing else, something or other is taken away by the crop; but what that something is he cannot determine. Lastly, if I ask Mr. Tomkins what is in the air and what in the water, he is still obliged to confess that he does not know. Now, gentlemen, I appeal to you whether the term *practical*, in its largest sense, will apply to Mr. Tomkins, while he actually knows nothing whatever of those things on which the success of the agriculturist peculiarly depends. I grant you that Mr. Tomkins looks at his crops, manures, and soils, in the whole, and that he has got some general idea of them as a whole; but then he never seriously considers what this whole is composed of; and what I propose to do is to extend his knowledge a little further; so that, instead of his attention being confined to those generalities on which it has hitherto been fixed, he should be made acquainted with every thing in the soil, in the crops, in the manure, in the air, and in the water. (Hear, hear.) Now, I ask you, gentlemen, as practical men, to say whether you consider that this knowledge would not be worth having, and whether it would not be well for every man, as far as it may be in his power, to seek to attain such knowledge. Well, now, having thus prefaced my subject, I shall at once commence the consideration of the manure made on the land; and I shall afterwards offer a few observations on the rotation of crops and the nature of those substances which are offered to the farmer under the name of artificial manure. And let me here observe that I shall be very happy, at the close of the lecture, to hear any remarks, or to answer any questions which may occur to any one present, having reference to any thing which I may have said; for some of the things which I intend to present to your notice may be so new, and so contrary to

ideas previously impressed on your minds, that you may doubt the truth of my statements; and the best way to settle any question of that kind is to argue the point at the close of the lecture. (Hear, hear.) Let us begin with the far-famed farm-yard dung, which is supposed to be so superior to all other things. It is that which grows the crops, and which, in the estimation of the farmer, is not surpassed by any possible combination of substances. Now, what is this farm-yard dung? It is formed by acting upon vegetable matter in some way or other. You either take a quantity of vegetable matter, and pass it through the stomachs of animals, where it is acted upon and the refuse passed out, or you put vegetable matter—as straw, or litter—in the yards, and allow the excrements of animals to be mingled with it, and a slow decomposition to take place. The whole being commingled and mixed together is known by the name of farm-yard dung. Now, a very little consideration will show that the whole of the material which is found by you, gentlemen, to be practically so useful on the farm is merely derived from vegetables; so that you are, in fact, applying the remains and refuse of vegetables to renovate the land. This is the whole secret of farm-yard dung: it is vegetable matter, which, when partially decomposed, is re-applied to the land, where it forms vegetables over again; so that you are continually working as it were in a circle. Thus the same particles of matter imported on the farm perhaps in the shape of oil-cake, first re-appear in the shape of a turnip, again as barley, now as beet-root, now as wheat—the cycle of changes continues until the identical particles are exported from the land as beef or mutton, or as grain. Now I hope I shall be able to offer one or two ideas with respect to the origin and nature of this farm-yard dung; and let me say we can never have our ideas too near the truth respecting the origin and nature of that which is so constantly under our notice. Some gentlemen have got an idea that animals have a mysterious power—of what nature it is impossible to say, but they imagine that it really exists—a mysterious power, by means of which they can change a turnip, or a quantity of oats or greens, into a superior manure for land; and that food must have passed through the animal before it can be really useful on the land. That is the idea entertained on this subject by ninety-nine farmers out of a hundred. I must proceed this evening to disabuse your minds of that erroneous notion; I must inform you that the manure obtained from animals is always dependent, as regards its value, on the food which the animal eats; and that the excrements of animals are always less valuable, and less powerful in manuring principles, than is the food consumed by those animals while producing the manure; that green food, ploughed into the land, will give more manure to the land than the *same food* eaten by animals. Not that I would recommend you, as a rule, to plough in your vegetables; but I wish you to remember that your sheep can deposit nothing on the land but what they have first received from the food; and that, under all circumstances, the amount deposited will be less than that received. Now let us look a little at this point. You know that in one of our ordinary fire-places, when coals are put in the grate and a light is applied to them, an action takes place which makes the air above differ from that below the fire: without any mention of the name of a single chemical element, you have only to apply your plain common sense in order to be aware that an action takes place between the air and the coals, producing heat, and that the air above the coals (in the chimney) is very different from the air below the coals, which enters at the grate. Now you give an animal a certain amount of food; that food is taken into the system: the constant action of the lungs, which inspire and expire the air, has the effect of bringing into the system a large amount of air. This air acts upon the food which is taken into the system. By the combustion or burning of a certain amount of that food, animal heat is produced, which keeps up the temperature of the animals, so that they get a higher temperature than the surrounding atmosphere. The expired air contains the result of that combustion, and resembles in composition the air of the chimney; another portion of food not used for producing animal heat is laid upon the bones, forming muscle, or fat; and what the bullock itself has no use for, is cast out of the system. Now, you observe at once that the animal, by acting in this way on the food, actually deprives it of certain constituents, and at the same time makes it less in amount; so that, in fact, the only real action is one which takes away certain portions of the food and renders the others more quickly soluble. All the soluble parts of the food are passed out in the urine, and all the insoluble parts in the excrements. There is a regular process performed in the laboratory of the stomach, the effect of which is what I have thus described. Now, the same thing takes place in the decomposition of vegetable matter. You lay down a large quantity of straw, and you let the water fall upon it, as well as the excrements of animals. You all know what takes place. The heap gradually heats, and this gradual heating is nothing more than the effect of the gradual action of the air upon it. Certain portions of the vegetable matter thus acted

upon by the air are consumed and taken away, and the bulk becomes less; so that, even in the process of acting on vegetable matter, you lose a portion, and it goes off into the air, just in the same way as the solid parts of coals pass into the air by means of the chimney. You all know that the solid parts of coal disappear and leave nothing but ash behind. The two cases are, in fact, identical. I may refer you to the case of a hay rick put up in too damp a state. In that instance, an immediate action takes place from the contact of the air with the moist hay, and that action continues increasing, until, at last, the whole bursts into a flame. Now, gentlemen, in either case, in the making of manure there is a diminution and a loss. You must have seen the reek going off from the dung-heap, and there are other substances which also disappear in the air which you cannot see. If what I have stated be true, you will draw the conclusion for yourselves, that vegetables ploughed at once into the land furnish a greater amount of the substances adapted for the vegetation of plants than they would supply if passed through the stomachs of animals—that is to say, to give a plain, practical illustration of my meaning, if you chop up an acre of turnips, making them sufficiently small for decomposition, and plough that acre of turnips into the land, you will have more manure in the soil than if you fed a flock of sheep upon it, without the addition of oil-cake or any other extraneous manure. Again, take other green crops, such as rape, and plough them in, and you will have a larger amount of substances calculated to bring forth the next crop than if you passed that acre of rape through the bodies of animals. You may call this theory, gentlemen, but it is absolute fact: there is no theory about it. It has been tested by practical men, and I will give you one or two instances. A gentleman heard me make this statement when I was lecturing at Maidenhead—and let me remark that the gentlemen who composed my audience on that occasion were not quite so decorous as you gentlemen have shown yourselves this evening; for I heard some of them call what I said “gammon.” (Laughter.) Now, notwithstanding its being “gammon,” a certain gentleman determined to try whether or not the case was as I had represented. A gentleman named Mr. W. Trumper, of Dorney, near Windsor, having 20 acres of rape, ploughed in one or two acres in different parts of the field. The rest was fed off by sheep. These sheep were luxuriating every day on a beautiful meadow adjoining, and were folded at night on the rape. I was invited last Midsommer but one to see the effect of this experiment; and about a dozen practical men were invited to meet me upon the occasion. The land was gone over, and I could point out every place where the rape had been ploughed in. The wheat stood eight or ten inches higher than the rest; and in the judgment of these practical men there was more than a quarter of an acre difference between the places where the vegetables had been ploughed in and the places where the sheep had been fed off. More than that, I happened to meet Mr. Trumper at the annual dinner of the Reading Farmers’ Club, when he told me the turnip crop succeeding was much better, and he fully expected to see it in the barley. Now, there can be no doubt that the ploughing in of turnips will have a similar good effect, and perhaps many of you gentlemen have in your recollection certain instances in which, owing to the severe frost rotting the turnips, it was necessary to plough them into the land; and when, contrary perhaps to the expectation of the farmers, a capital crop of barley was the result. I would not recommend you to forsake the feeding of sheep: I am now merely dealing with the facts of this case. It is a question of pounds, shillings, and pence, whether it is best to feed the turnips off or to plough them in, and therefore a case for the exercise of your individual judgments. In the instance of which I was speaking at Maidenhead it was found more favourable to plough in than to feed off, as that year the crops were excessive and the sheep high in price. A gentleman there was actually offering to give £2 an acre to any person who would send a flock of sheep on the farm to feed off the turnips. I at once said it would be better to spend 15s. per acre for ploughing in, and 25s. in guano, as the crop of barley would assuredly be better. Now, gentlemen, at the end of the lecture I shall be happy to hear any observations which may occur to practical men on this point, and to answer any objections which may be urged; and it must be particularly noticed that I leave out of the question for the present the mechanical action of sheep in treading the land, so necessary on some soils, and speak merely of the absolute amount of manure. To pursue the subject of this manure a little further, you see at once that the manure will vary as the food varies. If you use straw, or oil-cake, or turnips, the quality of the manure will vary accordingly, as the composition of these substances varies; and it will vary because the animal takes away only a certain proportion from each of these, and casts out the remainder as excrements. But the manure will vary, not only as the food varies, but according to the age of the stock. It is plain and palpable that the beasts which are already pretty nearly fattened will take far less out of the food eaten than lean, young,

and growing stock; because the young stock, having to form their bones and flesh every day, rob the food which they feed upon of a much larger quantity of valuable and nutritious matter than such as have nearly attained the fatted state. Not only does the quality of manure vary according to the food and the age, but the dung of milch cows is inferior to the dung of bullocks fed on the same amount of food. It is plain that if a cow is giving milk to young animals, the manure is robbed of some of its most valuable properties. If a chemist analyze milk, he finds it to contain some of the most important ingredients of manure; and of course, therefore, these ingredients are lost to the excrements. It is very clear that the value of manure will vary according to the kind of food, age of the stock, the nature of the stock, whether the stock gives milk or not, and whether it consists of sheep or of oxen. The seeds of plants contain the largest amount of nutritive matter; for as the purpose of the life of a plant is to reproduce its kind, we find that every other part of a plant is exhausted to produce the seed which shall give birth to another generation. When, therefore, seeds—as barley, oats, or oil-cake—are given to cattle, the animals will not only find more nutriment than in hay or straw, but the manure will likewise be much better.—Now, having thus spoken of the origin of manure, and having, I think, clearly proved to you that it is all produced from vegetables, and that animals have no power whatever to add one single atom to the vegetable matter received into their system, and that they deposit less in the land than they receive in the shape of food, let me next proceed to speak of the methods of manufacturing manure. And, gentlemen, you often mix your dung in a manner which I must say shows a great want of *practical knowledge*. I have seen manure placed in a position where all the waters from the out-buildings poured down upon it, and washed the soluble matter away into a neighbouring pond, there to poison the horses. I have gone among heaps of dung which were steaming away at a fearful rate, and my nostrils have instantly informed me of the escape of a substance which has a very high price in the market, yet the practical man appeared to be quite unaware that he was losing one of the most valuable ingredients of manure, namely, ammonia; he did not appear to imagine that he had any means whatever of helping himself. Now I wish to point out how pleasant it would be to the pocket to have a little more knowledge on this subject: it is the pocket after all which suffers most. You may term me theoretical, if you please; but I must say that I think there are as many crude theories among the so-called practical men as ever emanated from the brains of all the scientific men of the world combined. Now let us look at this manure. When the chemist comes to examine it, he finds that there are certain ingredients in manure, which are naturally volatile, or which become volatile in the process of fermentation, and go off into thin air, if not prevented; that there are other substances which are soluble in water, or become soluble in the process of fermentation, and which, if acted upon by water, are carried away; and that there are other ingredients which are neither very volatile nor very soluble. Now, to bring chemistry to bear no further than this, the question really is, how to stop the volatile substances from going into the air, and how to prevent the soluble from being washed away. It so happens that these very substances—the volatile and the soluble—are those which it costs most money in the market to import upon the farm, whether the farmer obtains them in the form of guano or in any other form. Now it is certainly very easy to arrest one of these wasting processes, that is to say the washing of the manure; there is no difficulty in preventing the liquid manure from being washed away; and whatever the farmer may say as to the loss being trifling, I am prepared to prove that on some farms which I have seen, of five or six hundred acres in extent, the loss was at least £200 [\$1000] a year. Now this, I say, can in a great degree be prevented. If the farmer, or his landlord, will not go to the expense of having the farm-yard completely covered over like a *railway station*, he might at least, by shoots or gutters, prevent the rain from the buildings falling on the dung: the redundant liquid and urine from the dung-heap and cattle should be conveyed into a reservoir, and in dry weather pumped back again over the straw, which will thus more quickly suffer decomposition.* You are all aware that vegetable matter decomposes most readily in contact with animal matter. In illustration and in proof of this, I need only refer to the thatched buildings where pigeons are kept. You always find that that portion of the thatch where the pigeons deposit their excrements gives way first. While, therefore, you are to pump the urine back again, so as to allow decomposition to take place more quickly than it otherwise would do, the next question is how to prevent the escape of the volatile materials. Of these volatile matters one is called ammonia; and is easily arrested by

* A tank might be made at little cost, to receive this rain-water, and a pump put in it for common use.

means of gypsum, or, what is better still, sulphuric acid. The water in the tank ought to be kept slightly acid, by means of sulphuric acid, which will totally prevent the escape of ammonia. If no tank is kept, over all the straw, every day and every night, should be thrown a quantity of gypsum, and the same substance should be applied night and morning to the cow-houses and stables.—I come now to the difference between long dung and short dung. This is a long-disputed question, and the practical men have almost got to cudgel blows about it. Now it is quite clear that in bringing down long dung to the state of what is called spit-dung, you lose to a great extent; a certain number of substances are carried into the air, and at the same time the manure becomes to a certain extent decomposed, so that the fibres of the straw, and other vegetable substances, are deprived of their power of cohesion. Now, gentlemen, I am a great enemy to the excessive fermentation of manure. I believe that it ought not to be fermented to any thing like the extent that it is done in some places. It is often fermented till one-half is lost; and then we are told that a load of that will do better than a load of long dung. I grant that in some cases; but if 100 loads of long dung be put direct upon the land, and another 100 loads of the same dung be allowed first to decompose and rot until only 50 tons be left, I ask, will the 50 tons equal the 100 tons? Will one load of the latter beat two loads of the former? (Hear, hear.) I contend it will not do so well. If you take 50 pounds in one case, and 10 pounds in another, you will find in nine cases out of ten that the long dung has the advantage; because in making the spit-dung you have a large amount of volatile matter sent off to benefit not your land in particular, but the whole neighbourhood, which men are not now philanthropic enough to do on a large scale knowingly. (Hear, hear.) Well, then, gentlemen, we have seen that you may arrest the volatile matters, as the ammonia, by applying gypsum or sulphuric acid. I hardly like to name these things among *practical* men, lest I should be censured. I know that some persons have such an antipathy to chemical names as to consider them as any thing else rather than terms applied to designate certain substances in nature. But I will venture to speak of one or two other things by name. There is the charcoal or vegetable matter of this manure, which goes off into the atmosphere by the action of the air, in the same way as the coals disappear from a fire-place, where nothing is left but the ashes; the charcoal having assumed the form of gas and gone into the air. Now, a similar action takes place in the case of manure; and if it be allowed to proceed, almost every particle of the charcoal will pass into the air. Then there is hydrogen, another long name for one of the constituents of water. Another substance is nitrogen. These are also found in farm-yard dung, and they are apt to hop away into the air if decomposition be allowed to proceed too far. Therefore I recommend you not to allow decomposition to go beyond a certain extent, but to let the manure rot and decompose in the land.—I will now take another point, namely, the forming of manure heaps when the dung accumulates faster than it can be put upon the land. The best plan in such a case is to lay a bottom of mould a foot in thickness. Upon this the manure ought to be carted, each cart passing over the manure previously laid down. The manure ought to be watered copiously with dilute oil of vitriol (one part to twenty of water) or sprinkled with gypsum, if those substances have not been previously used. Upon every two feet in depth of the dung six or eight inches of mould should be placed, and when built to the required height a covering of earth eight to ten inches in thickness should be placed over all. In a compost-heap thus made, the escape of most of the valuable ingredients is almost entirely prevented. If any of the ammonia should escape the action of the sulphuric acid, it would be retained by the mould; and by the slow action of the air upon it, nitrates of either potash, soda, or lime would be produced. Whether you are aware of it or not, it is the fact that the saltpetre used by the French, in their battles subsequently to the first Revolution, was made from the floors of cow-houses, from old walls, and actually from the urine and dung of animals—the ammonia of these things being converted into saltpetre. Now that which produced such an immense amount of saltpetre sufficient for all the wars of Napoleon, when the French were cut off from the East Indies; instead of being allowed to escape, might surely be converted by you, gentlemen, to the purposes of agriculture, which I need not say are *very much better than those of war*.—I now come to another point—that of box-feeding, or the feeding of animals under cover. The best way of making your manure is, I think, either to make it under a large open shed, covered over, or to put your animals upon the box-feeding system followed by Mr. Warnes. I have seen the box-feeding, not only at Mr. Warnes's and Lord Torrington's, but in other parts of the country, and I must give it my unqualified approbation, as one of the simplest means—I do not say the best that could be devised—of carrying out the practical ends of the farmer. Mr. Warnes does not tie up his bullocks, but he has litter under them, and he strews gypsum over

this litter. The urine of the animals and the solid excrements are arrested; fresh litter is added when the first gets too wet; and this manure is continually trodden down by the feet of the animal, and this treading so solidifies it, that just that necessary amount of fermentation takes place which produces a good solid black dung.—I am not now going into the question of cooking food for animals; I shall leave that part of the subject for a future time. I must, however, now proceed one step further, which practical men will, I dare say, consider an absurdity. Gentlemen, my opinion is that the time will come when you will have your bullock-houses warmed by as genial fires as those in this room. I will tell you my reasons for thinking so. The food, or at least a portion of the food, which you give to animals goes, as I before told you, to keep up their temperature. Now the more cold to which an animal is exposed the more food is required to keep up the temperature, which must be kept up or the animal will die. We all know that in cold weather an animal parts with more heat than in warm; consequently he must consume a much larger amount of food to furnish this heat, and this is the reason, and there is no other reason, why you cannot fatten animals in winter. In the winter the animal merely consumes to keep itself comfortable. The animal only produces fat when he has got more food than is required to keep up the proper temperature of the body. If you were to keep a fat and lean animal without food, you would find that the fat animal would outlive the other for many days, in consequence of having been able, by excess of food at other times, to lay up a store for other days. You must not suppose that the animal lays up fat merely for your use; it lays up fat for the purpose which I have stated, and it is only when it is able to satisfy itself as regards warmth that it lays up a particle of fat. This, I repeat, is the reason why you cannot fatten animals so well in the winter as in the summer. Now, mark what is the idea of the practical man on this subject. The practical man never thinks of buying a pound of coals to warm the animal, and thus, at the same time, to save the consumption of food. Now I do not call that very practical; and I venture to assert that the more practical idea of the chemist will eventually be carried into effect. Instead of valuable food being consumed for the mere purpose of keeping up the animal's warmth, there will be a consumption of coals, which are much cheaper for that purpose, and then you will be able to fatten quite as well in the winter as in the summer.

[Extract from a late English Paper.]

POTATO DISEASE.

To the Editor of "*The Dundee Courier*."

SIR:—As the time has now arrived when farmers begin to plant their potatoes, and as every one is anxious about the safety of his crop, it may be interesting and useful to communicate the following plan which I have adopted for three years, and with perfect success—so successful that I have never had a diseased potato. In the first place, let the seed be cut from end to end, rather than cross-ways, that some of the eyes of the rose may be in every plant. In the second place, the drill should be made a full yard wide, so that ample space may be allotted for working them up in the way they ought to be. In the third place, as soon as the potatoes are formed at the shaw, let the shaws be all bent to one side, and let them be furrowed up very high on one side, so that the drill presents the appearance of the ridge of a house, and the shaws grow out *at its side*; and, when the shaws are in this position, the rain is not conducted to the root, but is discharged in the bottom of the furrow. The process of bending the shaws in the way described, will cost about 1*d.* *per fall*. Last year I experimented on alternate drills, and the result was, that those drills that were not treated in this way, but left to the old course, were all diseased; whereas the drills that were prepared according to the plan I would earnestly recommend, were entirely sound—not one diseased potato among them. This plan is simple—all can put it in practice—and by following it, they will not, I hope, have to lament either a deficiency of crop or quality.

Yours, &c.

DAVID MARTIN.

GEORGIA RAILROAD.

WHAT argument could not accomplish, personal interest is rapidly doing for the South. The necessities connected with the law of progress, by which the United States are governed, have had their sway in Georgia especially, and as she was among the first, if not actually the first, to set up cotton factories within her limits, so she is now foremost among her neighbours in the work of building railroads; and we find in the Savannah Republican most cheering accounts of the advance made in the construction of the several lines. The principal one is the South-Western road, which connects Macon with Fort Gaines, a distance of about 150 miles, the cost of building it being estimated at about \$1,500,000. Of this sum \$650,000 is already subscribed, and upwards of 500 hands are employed. Twenty-five miles are already graded, and when the whole work is completed, it will not only open to the sea the finest cotton region of the State, but, by connection with other lines, afford easy access to several adjoining States.

The Muscogee Railroad, connecting Columbus with Barnesville, a distance of 75 miles, will not only afford an outlet for the iron and grain of the mountain region, but will give peculiar facilities to Columbus, from which the State cannot fail to derive great benefit. The Milledgeville road, from Gordon, on the Central road, to the capital of the State, a distance of 16 miles, is constructed not only with the view of rendering the seat of government permanent, but also of giving the planters of Central Georgia a way to the sea for their products. There are other roads projected, and all of them touch and tap important points. Those now in course of construction are, it appears, in vigorous hands, and will quickly be completed, while those projected will in all probability be soon put under contract. This looks well for Georgia, and it is a matter for gratulation that she has this to be recorded in her favour.

We copy the above, because we delight in witnessing the wonderful effects resulting from the combination of the plough, the loom, and the anvil, and desire to have our readers participate in the feeling. Georgia has built factories, and factories have brought with them so great an increase of demand for numerous other articles heretofore imported from the North, that manufacturing establishments of every kind are springing up like magic throughout the State. Population grows, because the people are not compelled to fly from the vicinity of their neighbours to seek the West, and with the increase of population come the desire and the power to construct roads; and thus is it always when men are enabled to work in combination with each other.

South Carolina repudiates the doctrine of protection. She will have no manufactures. She is determined to continue to exhaust her soil and her people by sending from the land all the products of the land, and the consequence is, that her people rarely meet for any purpose but that of passing resolutions, and her governor informs his constituents that if they would but make roads they could have lime in the interior of the State as cheaply as they now obtain it from Maine. Her orators declaim from year to year in relation to the wonderful natural advantages of the State, with its boundless meadow-lands, its river bottoms uncleared, its lime, and marl, and iron ore, and yet its population does not increase! The people of Georgia rarely meet for the passing of resolutions, but they are daily meeting to devise plans for promoting the combination of action which is essential to the making of roads and building of mills—for bringing the consumer to the side of the producer. They tell us little of the productiveness of their soil, but they afford to the world proof conclusive that they have productive soils, for they grow in wealth and population, and they are becoming daily more and more thoroughly satisfied that it is population that makes the food come from the rich soils, and that if they would cultivate such soils, they must bring the plough, the loom, and the anvil to work together. That State appears determined to become one of the richest of the Union. South Carolina, unless she change her policy, must inevitably become one of the poorest.

OVER-LIMING.

MAY we not have too much of a good thing in farming, as in other cases? As too much pudding will choke a dog, may not too much lime, without a due proportion of other manures, sicken the land? True it is, that the want of it, and the great cost of getting it in many localities, even where farmers have large means, may be considered among the greatest drawbacks that exist to the general restoration of the exhausted lands of the old States; but let the farmer always remember that the best hobby may be ridden too hard.

We recollect once meeting Judge Dorsey of Maryland, whom we take to be a very careful and attentive husbandman, and falling into conversation on agriculture, as neither of us needed any provocation to do, he intimated strong doubts about the value of *lime as a fertilizer*! He had, it appeared, used it freely for a number of years, and lately it had ceased to have its wonted effect on his estate on Elkridge, where lime has been, as much perhaps as anywhere in the Union, the great reliance for years past.

This conversation with an Elkridge farmer, who very well knows a hawk from a handsaw, was brought to mind long after, on reading the very admirable and well-digested Address of Professor NORTON, from which we take the following extract, to show clearly how it is that lime may ultimately contribute to the diminution of crops, as in the commencement it may have done to their increase. This it does at first, and for a series of years, where the land had needed lime, by increasing the crops, and in them, sending out of and off from the land other ingredients, of which the land becomes thus exhausted, and which, in due proportion, are as essential to the crops as the lime itself. Thus a man may increase the work done and the results by the use of an active and powerful team, and so he would continue to do, if combined with equal skill and equal implements; but if, when his plough is worn out, he does not supply its place with a new one, all the teams on the earth would never bring good crops out of it. And here we take the occasion to ask the reader, when he has finished this extract, (we wish we had room for the whole address,) what he has to say about "*practical men*." Nothing is more common than for men who have not the spirit to buy nor the curiosity or industry to read a book about farming, to descant on the superiority of your "practical man" over the man of science! Well, look here at Professor Norton. A young man, who studies and pronounces lectures on agricultural chemistry, and who, probably, never "ran a furrow" in his life. Yet take him on lime, take him on oats, take him on any agricultural topic, a thorough knowledge of which, in its very nature and constitution, is *essential to the highest success of a practical man*, and we venture to say there are not a dozen practical men in Connecticut who can do more than hold the candle while he explains them all, from beginning to end, going to the very kernel and marrow of the subject. We have long been disgusted with the cant of ignorant men against all practical knowledge to be derived *from books*. Such doctrine, carried to its legitimate and natural results, would re-establish the reign of ignorance and barbarism. No! no! give us such men as Norton, and Teschemacher, and Ruffin, and Holloway to explain the facts that turn up in the course of working men.

Farm-yard manure, made up, as it is, chiefly from vegetable materials, contains every thing that is requisite for the support of vegetation, and it may be thought unnecessary to apply any thing else. But we will suppose a given soil entirely deficient in lime, and that we wish to grow a crop of wheat upon it. The usual quantity of farm-yard manure is added. It contains lime, of course, but in ordinary cases not enough to supply the wants of a heavy crop. It is true that the deficiency may be made up by

adding an extra quantity of manure, but not so economically as by four or five bushels of lime.

The striking efficacy of lime, as often shown on long cultivated soils, even where they have been well manured, is to be explained on the same principles as in the above instance, it supplies a special defect in the soil. By an application of the same simple reasoning in a different way, we may understand what are called the exhausting effects of lime. The farmer finds that by the addition of lime he increases, and in some cases, doubles his crop. He is of course delighted, and after a few years applies it again; the effect is perhaps again very decided. He thinks he has discovered a substitute for ordinary manure, and is much less bountiful in its application. After a time, however, lime begins to lose its power, the crops become poorer and poorer, and even farm-yard manure does not produce so good crops as formerly. He now says that lime has ruined his soil, and in some parts of England it has become a proverb, "that lime enriches the father, but impoverishes the son."

Let us not decide the question until we reason for a moment upon the above mode of procedure. The land at first was specially deficient in lime only, and its addition therefore caused the production of large crops, all of the other necessary substances being present. *The great increase of the crop would of course afterwards require an augmented amount of these other substances also.* There was at first an abundance, however, and all went on well. After a time more lime was added, but only a stinted supply of any thing else. The natural consequence was, that eventually some of the other substances became exhausted. There was now enough lime, but no potash or soda; these are as necessary as the lime, and if they are absent the crops become scanty, and farther additions of lime do no good, it not being that which the land requires. The true policy would have been not only to supply the lime, but to keep up the stock of other substances now more necessary than ever before, *because of the increased crops.* Another property of lime is the decomposition of the organic matter of the soil, thus bringing it into a condition fitted for the nourishment of the plant. It therefore also disappears with extraordinary rapidity, and unless *fresh additions are made*, this proves another injurious effect in cases where the quantity of organic matter is small.

It does not follow from what I have said that lime must always be beneficial, for it is often the case that the soil over large districts already abounds in this substance. A fresh addition on such soils does no good. This explains many discordant opinions respecting its application. The rock of one geological formation may contain lime, and that of another none at all; the soils formed from such rocks will differ in the same degree.

These facts should be remembered in the application of all special manures. Were they so remembered, many of the conflicting statements now so prevalent would be at once explained. Near the sea, for instance, little benefit is to be expected from the use of common salt, for the soil there, in all ordinary cases, is already well supplied by the spray borne inland from the sea.

NEW JERSEY ZINC.

THE Sussex Zinc Company are commencing the manufacture of zinc in this city from the red oxide of that metal, obtained from their mines near Franklin Furnace. The ore is said to be inexhaustible in quantity, the vein being nearly vertical and of great thickness—in some places nearly thirty feet. Five bars of this metal just from the manufactory were exhibited to us yesterday as specimens. We understand that extensive orders have already been received for the manufacture of spoons, forks, and other household articles. This zinc, judging by what we have seen, is destined in the hands of the present manufacturers to supersede to a great extent the use of silver, particularly in such articles as we have mentioned.—*Farmer and Mechanic, New York, June 7.*

To prevent Hares and Rabbits from Barking Trees.—Mix soot and milk until the mixture acquires the consistency of thick paint, and apply it with a paint brush, choosing a dry day, if possible, for the operation: once a year is sufficient.

DAIRY HUSBANDRY IN THE STATE OF NEW YORK.

ONE of the most, among many, valuable papers in the Patent Office Report for 1848, (together with much matter of local and transient interest,) is the communication from Mr. Johnson, Secretary of the New York State Agricultural Society, giving a summary view of the agriculture and husbandry of that great State. Among other interesting letters and items, he communicates the following :

Mr. JOHN HOLBERT, of Chemung county, whose butter had been purchased by the New York gentlemen at thirty-three cents per pound, and used with so much gusto as *Orange county butter*, has often received the highest premium at our State and County shows. The present year it received the first premium at Buffalo, and also at the American Institute, New York. I annex a statement of his dairy, and also his method of manufacturing his butter, which will, I presume, be found of interest as well as of value to the dairy interests of our country.

Statement of the farm and dairy of John Holbert, of Chemung town and county. This farm is elevated about eight hundred feet above the tide water, in 42° north latitude. Contains two hundred acres. The past year forty cows have been kept, and the land managed as follows :

24	acres of wheat.
8	“ buckwheat.
10	“ oats.
20	“ corn and potatoes.
2	“ summer fallow.
40	“ meadow.
74	“ pasture.
22	“ wood and waste land.

200 acres.

Soil, a gravelly loam, with a slight mixture of black sand ; subsoil the same. No plants or slops for cows. All that is fed is hay, grass and corn stalks. Pastures are clover and timothy ; hay the same. Meadows produce from one to two and a half tons per acre. Plaster is used on the pastures and meadows every year. Several experiments in making butter have been tried the present season. Commenced making butter about the first of April, and, up to the 4th of May, made 512 pounds. May 5th, commenced packing for fall market, and closed 15th December. June 15th, drew the milk from 37 cows. Morning's mess, 525 pounds ; evening's, 632 pounds ; in all, 1,157 pounds, making 3 pounds 11 ounces of butter to 100 pounds of milk. June 20th, had three more cows come in, which made dairy full. Cows commence dropping their calves in March, and do not all come in until the middle of June. Do not rear all the calves, but usually keep the finest. Swine are kept to consume the butter-milk. Cows are generally the common breed ; have a few that have a slight mixture of the Durham blood. Their ages range from three to twelve. Prefer a cow not less than five years old for the dairy, and as much older as she winters well. Change pastures often, and think it advisable to change twice a week. Too much care cannot be taken to have cows well watered and salted. Keep a large watering-trough in cow-yard, where the cows are observed frequently drinking large quantities of water immediately after coming from the brook. Salt is kept lying in the yard the year round. The cellar is thoroughly cleaned every spring. Milk is kept in one cellar ; the butter in another. Too much care cannot be taken as to the time of churning. Usually churn from one hour to one and a half. Put from one to two pails of cold water in each churn before commencing to churn, and

one pail more in each when nearly done, to thin the milk and make it produce all the butter it contains. When done, take the butter out, wash it through one water; then set it in the cellar and salt it; then work it from three to five times before packing; do not finish salting until the last working; then add a little salt, which makes brine that keeps the butter sweet. One ounce of salt to one pound of butter is about the quantity that suits most people, or at least the butter-buyers in the city of New York. The butter is then packed, if the weather is cool, the first day; if warm, the second day. If the milk is too warm when churned, the quantity of butter will be less, and the quality and flavour not so good as when it is cool at a proper temperature. Butter is worked by hand; used a butter-worker last fall, but recommend the hand-ladle as decidedly preferable.

Packing.—Fill the firkins to within two inches of the top; then lay a clean cloth on the top of the butter, and put salt on the cloth, and keep it covered with salt and brine all the season. Great care should be taken not to let the milk stand too long before churning, as, in that case, in hot weather, it becomes too sour, and the butter will be sour also; and in cool weather it will become bitter, all of which can be prevented in cool weather by putting about one quart of butter-milk in each pan or tub before straining the milk, and in hot weather by churning as soon as the milk becomes thick and moist on the top of the cream. Use salt of the Ashton brand.

From 5 cows in 30 successive days—commenced 25th of May—made 248 pounds of butter. On 11th of June, drew from five cows 187 pounds of milk, which made $8\frac{1}{2}$ pounds of butter. Churn all the milk by horsepower, and usually churn four $1\frac{1}{2}$ -barrel churns at once.

On 8th of August, drew the milk from 40 cows in the morning, 508 pounds; in the evening, 519 pounds—in all, 1,027 pounds, which made 39 pounds of butter.

The morning's mess made 3 pounds 10 ounces from 100 pounds of milk.

On 11th of August, drew the milk from 20 cows, weighed and churned it separately—result as follows:

No. 1	.	.	26 pounds milk,	.	.	1 pound 8 ounces butter.
2	.	.	25	"	.	" 10 "
3	.	.	27	"	.	1 " 6 "
4	.	.	28	"	.	1 " 2 "
5	.	.	30	"	.	1 " 2 "
6	.	.	23	"	.	1 " 4 "
7	.	.	31	"	.	1 " 8 "
8	.	.	28	"	.	1 " 1 "
9	.	.	27	"	.	1 " 1 "
10	.	.	26	"	.	1 " 3 "
11	.	.	28	"	.	1 " 12 "
12	.	.	24	"	.	1 " 4 "
13	.	.	29	"	.	1 " 14 "
14	.	.	19	"	.	14 "
15	.	.	16	"	.	12 "
16	.	.	17	"	.	8 "
17	.	.	21	"	.	14 "
18	.	.	33	"	.	1 " 15 "
19	.	.	31	"	.	1 " .. "
20	.	.	31	"	.	1 " .. "

The above table shows the difference between cows and milk.

On churning the milk separately, one of the best cows makes as much butter as three of the poorest giving the same quantity of milk. June is a better month for making butter than July or August. Made 107 pounds more butter from 37 cows in June, than from 40 cows in July. One hundred pounds of milk, drawn from best cows, giving richest milk, will

make one pound more butter than 100 pounds of milk from the whole herd. There is still *more difference in quality* than quantity; one cow, *well kept*, is worth two poorly kept, for dairying.

	Pounds.
Commenced making butter 1st of April, and made to 4th of May, ...	512
Commenced packing, 4th of May. In May, 26 days, made	747
In June, 30 days, ...	1,186
In July, 31 days, ...	1,079
In August, 31 days, ...	1,016
From September to December 15—3½ months, ...	1,948

Sold butter, 30th November, for 23 cents per pound, in New York.

The whole amount of butter made and sold amounts to \$1,492 24. This, over and above family use for eight persons, on an average, gives \$37 30 per cow. Last year, same dairy sold in New York for 24 cents—went South, and stood climate well.

JOHN HOLBERT.

December 25, 1848.

EXEMPLARY LIBERALITY.

IN 1846, ELLIOTT CRESSON, Esq., proffered to the Franklin Institute, for the endowment of a permanent fund, *one thousand dollars*—on condition that from its net income the Institute should prepare and offer a *gold medal*, to be awarded, at the discretion of the Society, to such important inventions and improvements in the useful arts, as, (to use Mr. Cresson's own words,) might, by the Institute, from time to time, be deemed best calculated to advance *home industry*, and consequently the real independence of our beloved country.

We understand one medal has been lately awarded for "American steel, made at Jersey City, by Messrs. Dixon & Co. Mr. Pugh Madeira, surgical instrument maker, Philadelphia, certifies that surgical instruments made from this American steel possess as fine an edge and appearance as those manufactured from the best imported cast steel."

Thus, with proper encouragement, should we proceed from one invention and improvement to another, and realize, in a few years, a degree of independence of other countries, for essential articles, which under the blighting effects of an impracticable free trade policy we should never attain.

Mr. Cresson has here again evinced a discretion worthy of his liberality.

It were to be wished that the surplus fund of the Patent Office, (if one must be accumulated from the tax on inventors, instead of their being paid for them,) could be given in premiums, not for jimcrackery, but for *important discoveries*—so pronounced to be by a board of commissioners of the highest character for science and practical knowledge. How much better than to throw that surplus into the public treasury, like a drop in the ocean.

THE PRIZE HAM AT THE LAST MARYLAND CATTLE SHOW.—Mrs. Horsey's ham was cured by the following recipe:—For twelve hams of common size, take eight pounds of brown sugar, half pound of crystallized saltpetre, and five pounds of fine Liverpool salt. Rub well with the mixture, and let them be a week in a cask with the skins down. Then make a brine strong enough to bear an egg, and add two or three quarts of ley from hickory ashes, refined by boiling and skimming—cover the hams with the brine, and keep them down with a weight, and let them remain in it three or four weeks. Then hang up in a smoke-house, and after twenty-four hours smoke with hickory wood until cured, say six weeks. This ham was wrapped thickly with timothy hay before being boiled. [And we presume so boiled in the hay.—*Ed. P. L. & A.*]

Needwood, Nov. 8, 1848.

WITHDRAWAL OF SUBSCRIPTIONS.

ORIGIN OF "THE PLOUGH, THE LOOM, AND THE ANVIL."

From a file, or rather a pile, of letters, some of which have been answered, and some not, it strikes us to bring here together a few extracts.

We confess to no such delicacy, affected or real, as should prevent us from thus preserving, in a more durable form, for the gratification of those who are to come after us, (and for whom we have nothing else,) the testimony of such men to the value of our humble but constant labours in the great cause of agriculture; for, in perfect, unqualified sincerity, we can aver that it is on account of the farmer and the planter that we desire to see pursued such a course of legislation as will tend to raise up, close around them, prosperous customers, instead of scattering our population sparsely over millions of miles, in search of a mere subsistence as agriculturists. What nation purely and exclusively agricultural ever yet rose to a high degree of wealth, power, and civilization? It will be seen that we give the condemnation as well as the approval of our course. At one thing we do admit our mortification, to wit: that withdrawals should have come *almost exclusively* from *Virginia and South Carolina*; for, if required to specify *the States* in the Union wherein we have always had the *greatest number* of friends, most kind and most valued, there are none that could take precedence of these. Scarcely have we ever contemplated any project for the melioration of any agricultural interest, that our thoughts have not turned to those gallant and hospitable commonwealths, as fitted, by the character of their sons, to kindle the liveliest sympathy and regard in the bosom of those who have sagacity to distinguish and a heart to yearn towards all that is generous and gallant in our nature. But neither friendship nor admiration can blind us to the belief that no two States in the Union have had their natural advantages (so abundant, even to profusion) so much paralyzed, and their progress in population, wealth, and power so fatally arrested, as have these two noble sisters of the Republic, by a false policy of government, engendered in an erroneous public sentiment as to the means by which the resources of a State are to be most effectually developed and improved. We are free to confess that it is of late years that this impression has grown into conviction, the result, as we honestly believe, of anxious inquiry and a better understanding of the real sources from which must spring every country's growth and prosperity. Yet far be from us the spirit to dictate or dogmatize; and so far from taking umbrage at any difference of opinion, how, but by collision of thought, especially in speculative matters, can men arrive at truth, which is the object of every honest mind? Heaven keep us for ever from that

"Pride of ignorance,
That with small knowledge thinks itself full wise!"

With the conscientious desire to lead the cultivators of the soil to the perception of those principles of political economy which we believe to be at the foundation of prosperous agriculture, we have established a journal, through which to explain them, asking only that our arguments may be taken for what they are worth; but let them be first examined—"strike, but hear." It is not enough that a man shall tell me, such and such have been his opinions—such the doctrines he has "been preaching for thirty years;" that he wants no restriction on his choice of markets; that he desires to sell where he can get the most, and buy where he can buy the cheapest. Such old and plausible sayings, unaccompanied by reasons, are mere dogmas at last—generalities, such as have been honestly entertained

in Carolina and Virginia from 1798 to 1848; but where has the practice upon them brought and lodged these noble States at the end of half a century? To the last stage of agricultural exhaustion and paralysis, sinking almost out of view in the wake of others, starting fairly with them in the race for population and power. True, there are those of the ancient school who profess to find in a population so sparse that no man can hear his neighbour's dog bark, the best evidence and guaranty of social happiness and civilization. To say nothing then of a stagnant population, (which too much resembles a stagnant pool,) and with it the loss of political power, let us suppose the population to be extinct, and the traveller to come along in search of the monuments of a once active, industrious, civilized, and enterprising people; how different, even in their ruins, would be the aspect of depopulated Massachusetts and Virginia! The former, leaving behind them well-built towns all over the State, substantial farm-houses every half mile, stone fences made to endure for ever, roads on which two oxen haul as much as six in the South, and webbed all over besides with railroads, built at the cost of many millions; thriving orchards yet bearing their golden fruit in vast abundance; cattle and sheep covering every hill and browsing in every meadow; banks in every village, and factories on every stream, with churches and school-houses everywhere in view. Alas! how different the face of every State where the cry has ever been, *Laissez nous faire*—give us “free trade!” There may be seen along the tide-water courses magnificent ante-revolutionary mansions converted into stables and granaries; out-houses in ruins; churches and fences in a state of decay, with vestiges of old orchards and gardens scarcely visible; roads almost impassable; and, from the interior, transportation so distant and expensive as only to admit of the cultivation of things that will bear *such* transportation, making no return to the land that produced them;—and all this to be seen and said of a people absolutely eminent for their general intelligence, their hospitality, and their patriotism. Nevertheless, for more than half a century, the cry has been and still is the same—“Give us free trade.” Let us compete over the world for the markets of the world—let us admit British manufactures, the work of her starving operatives, if she will let us compete in her markets with our grain against the serfs of Germany, who are glad to get \$50 a year and find themselves, living on *pumpernickle*, or hard, black rye bread, only fit for hounds hunted three times a week. So, we too are for free trade; but let us first break down the colonial vassalage that binds the world in subserviency to English policy, so much in opposition to the convictions and interests of the world and the world's readiness to resist it, that we see her compelled to keep up a thousand ships of war, at a cost (quite as much as *ought* to support our government) of \$15,000,000, which, by the by, is about the amount she levies, in a spirit of *free trade*, on our tobacco!

Suppose her manufactures let in to even double the amount they are now—doubtless, for the time, until our domestic industry should be entirely destroyed, we might *buy cheaper*, but how long would that last? Whereas, we have the authority of the late Secretary of the Treasury for saying that continued protection to our manufacturers would prompt them to advocate free trade. Let us then determine to break for ever these colonial chains that bind us to England, notwithstanding our nominal independence, and in less than twenty years we could supply the world with manufactures, and those who would make them would be eating the produce of the American farmer and planter on the spot, and he would be returning to his land the refuse of its products, and Virginia would get rich. Her sons would stay at home, her daughters would get married, population would thicken, the arts, useful and industrious, would prosper; and in place of despair,

and desertion, and office-hunting, would come population, and power, and wealth, education, confidence, and self-respect, and advancement in all that distinguishes the highest from the lowest condition of organized society.

Let us make a comparison in some points between two States of the same age—one for the separation of the plough and the harrow from the loom and the anvil—the other for drawing them all as near together as possible. One for free trade—the other for the encouragement of the home market. One denouncing banks and factories—the other building them.

	Square Miles.	Acres.	Population in 1820.	Population in 1840.	Banks in 1849.	Annual products of Industry.
Virginia,	61,302	39,233,280	1,065,379	1,239,797	9	76,769,053
Massachusetts,	7,250	4,640,000	523,287	737,699	109	75,470,297

Thus, while Virginia, beginning on a population capital of more than a million, gains in 20 years less than 175,000, Massachusetts, with half of her capital in population, gains in the same time more than 200,000! And then, when the Virginian gets his corn and wheat to tide-water, in competition with the immigrants from the West, who have been driven there to be agriculturists, because the free trade policy won't let them stay on the sea-board to be manufacturers and consumers,—when the Virginian does get his little surplus to tide-water, where is he to find his best customers, one year with another? In old England or New England?

Instead of dreaming for ever about free trade and the resolutions of '98, let him dream of General Jackson's letter to Doctor Coleman, and let him read and judge for himself. Let party hacks ride other hobbies, but let this great national question be withdrawn from their hands; there is enough for them to squabble and cajole the people about besides. The real difficulty has been in shaking off the colonial allegiance to England which was the natural growth of our extraction from her, although we may not be sensible of it. What daughter ceases, on getting married, to obey instinctively the suggestions of her mother, even though she may think them wrong; and they must be palpably so before the daughter can perceive it. Even the last war into which she kicked us has not made us *really* independent of English influence. As General Jackson says, we are still too subservient to "the policy of the English merchants." But let the Virginia farmer read this:

In 1844—we take that year for two reasons: 1. There was no famine anywhere, and the operations represent the current of trade under ordinary circumstances, and, 2. We happen to have the documents on hand—our exports from all the States to all Europe, of flour, corn, and pork were as follows, viz.:

161,103 barrels flour	-	-	-	-	-	-	-	\$810,556
88,903 bushels corn	-	-	-	-	-	-	-	44,428
11,788 barrels pork	-	-	-	-	-	-	-	117,880
								972,864

The imports from other parts of the United States into New England were, for the same time—estimated by adding 50 per cent. to the imports of Boston, for the quantities received at all the other New England ports, and which we believe to be under the mark, and deducting the foreign exports from Boston:—

922,017 barrels flour	-	-	-	-	-	-	\$4,610,085
1,960,663 bushels corn	-	-	-	-	-	-	1,176,397
60,000 barrels pork, exclusive of exports	-	-	-	-	-	-	600,000
							6,386,482

Thus it appears that under ordinary circumstances the consumption of New England for the breadstuffs and the pork of the agricultural States is more than *six times* as large as that of *all Europe*, and the same proportion will hold good when applied to beef, lard,

hides, wax, hemp, beans, castor oil, lead, feathers, oats, rye, barley, butter, and all other productions of the soil, except tobacco and cotton.

Well, it was to make known, for what they are worth, our reflections on the state of things as it exists, and to suggest such a policy as will, in our humble judgment, best comport with the great agricultural interest of the Union, together with some hope of being able to obtain an honest livelihood, for which, otherwise, we had no means—not a picayune—that we have undertaken to put forth this journal. So far we have had every reason, with some few exceptions, as in the case of the first two letters here presented, to feel well content with the manner in which the Plough, the Loom, and the Anvil has been received. The rejection of the work by those who had patronised other journals under our control has come, as we have said, chiefly from *Virginia and South Carolina*. Far from taking any exception to the course of those who renounce it, for which we should have no warrant, we fully recognise their right, and find even some mitigation of regret at parting with them in the persuasion that the sentiment is in some measure reciprocated by our old friends. Gentlemen always know how to differ without any forfeiture of personal regard and confidence; while fools only know not how to make allowance for inevitable disagreements of opinion even on questions not susceptible of mathematical demonstration.

THE EXTRACTS.

Darlington C. H., S. C.

I enclose \$3, which you will please place to my credit, for "The Plough, the Loom, and the Anvil," and you will strike my name from the list of subscribers as soon as the time expires for which the money will pay. A protective tariff has ever been in a high degree odious to me, and it does not become less so, as time but serves to illustrate the blessings and the wisdom of free trade principles. My abhorrence of the injustice of the tariff of '28, made me a volunteer in the military service of this State during the memorable Nullification contest of 1832, when I, in common with an overwhelming majority of the people of this vilified State, was prepared to do as the venerated fathers of '76 did in relation to the tea-tax of tyrannic Britain. Nothing but similar provocation is needed to place me on that same Nullification Rock again. Consolidationists, and grasping monopolists combined, with all their fury, have never been able to make such a "hob-goblin" out of it as to frighten true free-trade and State-rights men from their propriety. Entertaining these views, I am unwilling to contribute my mite to the dissemination of contrary views. They may answer for a Northern—I am sure they are not congenial to a Southern latitude.

With great respect for your general service in the cause of agricultural improvement,
I remain your ob't serv't, T. P. L.

The writer will excuse us for taking the liberty to give his initials. The name of the writer, (not to be exceeded in his title to respect,) would have been given, with others, in full, if we had been certain it would meet his approbation.

I was much pleased with your paper, as far as agriculture was concerned, but as soon as you turned politician, and the advocate of the Northern manufactories, I resolved to be a subscriber no longer.

Yours truly,

I. M. B.

There are five Northern States in which we have not fifty subscribers.

But see what says E. PHINNEY, of Mass.—no manufacturer, but a model farmer and a highly educated gentleman:

Lexington, Mass.

As for my opinion of your new work, "The Plough, the Loom, and the Anvil." In the first place, I have been actually astonished that one head and hand could do so much. I want more time than is allowed me in the day and night hurry of court business to express my views of a work so broad in its range, and so eminently calculated to be of great utility to the interests of the *whole* country. I most sincerely believe it will do more to promote the cause of agriculture, to give a healthy tone to the great body politic, and to reconcile conflicting parties, than all the noisy declamations of hot-bed politicians. In short,

it is *just what the country wants*, and must convince every owner of land that, if he would thrive by the Plough, it must be by bringing it in proximity with the loom and anvil.

I had not seen a single number of the work till I received the seven numbers forwarded by you, and regret that I have so long been deprived of the pleasure of perusing its interesting pages.

Every New England man, woman and child, owes you a debt of gratitude that should at all times secure to you open doors and open hearts.

With kindest wishes, that you may for a long time to come be enabled to pursue your useful labours, I am, very sincerely, your friend,
E. PHINNEY.

Senate, U. S., Washington.

I do not know what success Mr. Anderson's invention [for breaking and preparing hemp] has met with. I will make some inquiry, and should I obtain any information of value you shall have it.

I was much gratified at the perusal of your speech, (at Middletown, Connecticut,) which exposed the fallacies of our free trade politicians. The true cause of the depression of agriculture in our country is to be found in the fact that we purchase and pay for immense quantities of foreign bread, meat and vegetables, when we pay for the articles manufactured abroad which we consume. I trust your labours may open the minds of our farmers to this truth. Let them see that when they wear a coat made of British broad-cloth, they must pay for the food the manufacturer consumed while engaged in making the cloth.

With great respect, your ob't serv't,

J. R. UNDERWOOD.

Lebanon, Pa.

Your new journal I believe to be destined to do much good under your lucid and useful pen, to the agricultural and other American interests. The following passages from Gen. Jackson's letter to Dr. Coleman, in 1824, are sound truths, which are never directly denied, although there has been great pains taken, and endeavours used, to establish an opposite system of governmental policy:

"Heaven smiled upon and gave us liberty and independence. That same Providence has blessed us with the means of national defence. * * * He has filled our mountains and our plains with minerals—with lead, iron and copper—and given climate and soil for the growth of hemp and wool. These being the grand materials of our national defence, they ought to have extended to them *adequate and fair protection*, that our own *manufactories and labourers may be placed on a fair competition with those of Europe*, * * * In short, sir, we have been too long subject to the British merchants. It is time that we should become a little more Americanized," &c. &c.

We advocate protection to American interests at this time, to maintain the labour rights of our free citizens, in a just scale of home competition for the American market.

A large portion of our freemen are labourers, and if they consult their own interests they will not vote themselves down to the same level with their oppressed brethren in England and Europe. They see the propriety of a discriminating tariff upon foreign productions, assessed for the purpose of "placing our own manufactories and labourers in a *fair competition with those of Europe*," and thus securing for themselves fair wages, and to the farmers fair prices for their products. Those who, like your correspondent, "R. S. W.," believe that "the same policy virtually actuates both the cabinets of London and Washington," ought to bear in mind that those who advocate "adequate protection for our own manufactories and labourers" have no objection to "free trade," provided always that the trade be *mutually beneficial* as well as free. But, as American manufactories cannot so compete without a great reduction of wages, or a discriminating tariff to protect them in keeping up the present rate of wages, the latter is preferred.

The cotton planter, the merchant, mechanic and manufacturer, know from experience that home competition in the production and sale of the various commodities, always secures fair prices to the consumers of those articles. Although not as *directly*, yet all are greatly benefitted in an American system of home production and home markets, which secure regularity of business and a sound currency.

Very respectfully, &c.

S. GUILFORD.

Richmond, Va.

I feel a most profound interest in all that promotes the prosperity of agriculture, and I most heartily wish for the success of your periodical. So far as one whose life is so retired as mine can promote its circulation, I shall always endeavour to assist it.

Permit me to say, however, that it was a cause of deep regret to me that you found it

necessary to modify your first plan, and to substitute a smaller and more varied publication for "The Farmers' Library," the only comprehensive and philosophical agricultural journal we had in the country during its brief life. I suppose, however, the alteration was no agreeable one to yourself, but a sacrifice to the want of agricultural spirit among your subscribers, and the barbarism of public taste in this country.

Very respectfully yours,

JAMES M. MORSON.

Maplebrook, Pa.

Accompanying I send twenty dollars, on account of ten subscribers to your invaluable periodical. My engagements have prevented me from doing so much for the good cause hitherto as I could have wished, but I trust the leisure of the winter will afford me abundant opportunity of proving the interest I feel in your undertaking.

I shall take an early opportunity of calling public attention to "The Plough, the Loom, and the Anvil," in the three papers of our town, and cannot but hope that it will obtain a large circulation in a country *so essentially tariff* as ours.

With my best wishes for the success of your patriotic labours, I am, dear sir,

Very truly yours,

ROBT. R. REED.

P. S. Monday morning—On coming to town this morning, I added four more names to the list, which you will find below. All have paid, except Mr. —, who is absent from home just now.

R. R. R.

New Berne, N. C.

Dear Sir—I heartily approve of the leading theory or principle of your work, and it will always afford me great pleasure to speak in its commendation, and in any way to aid in its circulation.

There is no person to whom agriculture, and its kindred sciences and arts, owes so much in this country as to yourself, and I hope, however long deferred, the debt will be one day paid with interest.

You address me as Gov. Manly. My brother, Charles Manly, is the governor, and resides in Raleigh. I am one of the Judges of the Inferior Courts of the State, and reside at this place, (New Berne.)

With very great respect,

M. E. MANLY.

To J. S. Skinner, Esq.

CHOWDER.

WE should like to have *Mr. Webster's* judgment on the following, from "Stoddart's Angler's Companion." In cooking chowder, 'tis thought "Black Dan" can beat any body "into fits."

A simple way of cooking a whiting, or good salmon trout, by the river side :

Kindle a fire of dry wood. Take your fish when just out of the water. Fill his mouth with salt—roll him up in two or three folds of an old newspaper, twisting the ends together. Immerse all in the water, until the paper has become thoroughly saturated. Then lay the fish among the embers of your fire. When the paper presents a well charred appearance, the trout is properly done, and will prove a savoury and acceptable morsel. The fish, I may observe, must *not* be cut open and cleaned. During the firing process, the intestines and other impurities will draw together, and not in the slightest degree injure the flavour of the trout.

A Young Farmer requires a Remedy for Lame Sheep.—If lameness has been for years in the flock, proper attention has not been paid thereto, and it will require considerable time and perseverance to eradicate it. The feet must be properly pared out quite to the bottom of the disease, without making the part bleed, if possible; then apply a solution formed by mixing half an ounce of verdigris, half an ounce of blue vitriol, half an ounce of flour of sulphur, and half an ounce of common salt, with as much spirits of salts as can be bought for six cents. If the weather is wet, the sheep should be housed for a few hours after dressing, nor will one dressing effect a cure where the disease is of long standing. The sheep must be constantly examined, and the paring continued, and when the disease appears, wash it with the solution. This is a certain cure, if properly attended to.

ON THE VALUE OF WHEAT STRAW AND CORN FODDER AS PROVENDER.

How vague and undetermined is the knowledge of farmers on points of the greatest practical importance, in regard to which their business requires them every day to have exact information! To overcome this looseness of ideas and of practice in their profession, what is needed is, *early and definite education*, in stricter reference to their own pursuits; and this they will obtain, after years of *united* exertion, if they can be brought *to unite and to agitate*. We have ourselves been thirty years endeavouring to persuade them to do so; and it is only now that the sentiment in favour of public appropriations for agricultural education seems to be taking root in good earnest.

Whence does the government derive its means of public appropriations? Is it not from taxes accruing from the consumption of imports *by farmers and planters*, in the proportion at least that they excel *all* other classes? Why, then, should not public provision be made to instruct their sons in the value of the various kinds of food, and the mechanical structure of farm wagons, as well as the sons of a favoured few in the laws of projectiles, the composition of gunpowder, and the construction of gun-carriages? But we must take some other place for such reflections.

There are few things about which there is less exact knowledge than about the value of wheat straw, and here is a plain, sensible, valuable paper from a working man, who speaks from large personal experience for a series of years. We find it in the *Patent Office Report for 1848*, communicated by Major Jones, of Delaware. This is the sort of paper which we like to preserve, because it is for all time and for all parts of the country.

When a very young boy, with a natural propensity to be hunting, like a terrier, about *stables*, under a double impulse of *love of horses*, and sometimes perchance to find and plunder a stray hen's nest—we remember, even then, the careful grooming and fine coats and condition of horses in the stable of Capt. BENJAMIN HARRISON, of Holly Hill, West River; and, "little shaver" as we were then, we well remember that *wheat straw* was a favourite provender with him, especially for saddle horses, for the reason, among others, that it had a tendency to keep the skin and coat in fine order.

He, too, was one of those plain, intelligent, high-minded, honourable men, and close observers and neat managers of whatever he took in hand, that made men look up to and quote and respect him as an *example for his neighbourhood*. Honoured far above intriguing politicians, however successful, be the memory and example of all such useful men—such men as Doctor Fenwick, "of that ilk," and Gale, and the late Thomas Sallman, &c.

PORT DEPOSIT, February 3, 1849.

DEAR SIR:—Yours of the 1st instant came duly to hand, inquiring of me the value of straw and corn-fodder as provender. Good clean wheat, rye, or oat straw is always valued at half the price of hay, provided the distance to haul it to market does not exceed three miles. When hay is worth \$15 per ton, if the distance is greater, the charge is more. Corn-fodder, when well cured, will always command as much as good hay. The fodder is principally used for milch cows. When I can buy good clean wheat or rye straw at half the price of good hay, I prefer it to hay for horse feed; and at all times, when I can get straw, I feed it to my horses in preference to hay, for the reason that hay has a tendency to make a horse short-winded. And I have known instances where horses have been kept all winter on hay, without grain, and were not worked any to require grain, and when spring came, they had the heaves. And I have also known horses have the heaves that were cured by feeding them on clean straw, with a little grain; and I am fully convinced that a horse that is constantly worked as a stage horse,

carriage horse, or saddle horse, will stand more fatigue, and his wind will be better, by being kept on oats, or corn, and the clean straw, than he would if he had the hay.

But when you feed corn, it is important to give the horse plenty of salt. When I feed corn altogether, I make a tub full of salt and water, (about one gallon of salt to twenty gallons of water,) I then put the corn (in the ear) in this pickle, in the evening what I intend to feed in the morning, and put in in the morning for noon, and put in at noon for feed at night, &c., and give plenty of straw with it; and horses will stand the heat of summer as well as they would on oats and straw; and I am confident they will stand it better than they would if hay were substituted.

I do not wish to be understood to say that a horse would do better on straw alone than he would on hay; but if you will take straw, and take the balance of the money in favour of the straw, and buy oats and corn, and feed it with the straw, which will make the same cost, then your horse is better than he would be on hay alone. But when you take a horse that is always grained fit for service, you save by the straw.

In 1847, I paid for wheat straw \$8 per ton, and hay sold in that year at \$16 to \$18 per ton. In 1848 and at present I am paying \$6 per ton for straw, and hay can be bought for \$10 per ton.

Inquire the advantage of the use of clean straw of some of the old northern stage contractors, and I think they will agree with me.

I remain, with respect, your most obedient servant,

Mr. John Jones.

J. J. HECKART

INDIANA AND HER RESOURCES.

By almost every mail we receive new evidences of the growing determination throughout the country to make an effort to bring the loom and the anvil to take their places by the side of the plough and the harrow. The planters of the South see in the gradual increase in the quantity of the great staple and equally gradual reduction of price in the foreign markets, on which they have been forced to depend, nothing but ruin. The farmers see that their surplus of food is increasing because of the vast numbers who are annually forced to seek the West, there to raise food, when they would have preferred to remain at home consumers of food. Everywhere the agricultural interest is awaking to the fact that they waste annually more labour and manure than would pay for all the cloth and iron they consume, and that if they would increase in wealth and prosperity, they must follow the advice of the illustrious Jefferson, and exert themselves to bring the manufacturer to their sides. Everywhere they are becoming more and more sensible that true political economy is to be found in the advice of the patriot Jackson, who desired that we should take more care of our own labourers and feed fewer of the paupers of Europe. In this course of action Georgia stands distinguished among the Southern States, and she is consequently advancing in wealth and population at a rate far exceeding any other of those south of Mason and Dixon's line. At the West, Ohio has made great advances, and Indiana is now preparing to follow. The town of Cannellton, in that State, although now in its infancy, seems destined to become one of the great centres of manufacturing industry for the valley of the Mississippi, and when we look at the vast advantages it possesses in its rich abundance of cheap fuel, and its proximity to the great highway of the West, we are disposed to believe that the time may come when it will dispute with the great towns and cities now existing for pre-eminence.

We noticed, a few weeks since, the first number of "The Economist," a weekly journal printed at that place, whose distinct object was that of calling attention to the advantages of the place, and the immense resources of the State at large, with particular reference to the facilities afforded for combining the cotton of the South and the cheap food of the West, and supplying cloth at a cost so moderate as could not fail greatly to increase consumption. In one of the recent numbers now before us, we find an address by Hamilton Smith, Esq., of Louisville, one of the founders of the future city, which abounds in facts of the most important kind on all these points, and deductions, the truth of which appears to us so obvious, that we would gladly lay the whole paper before our readers, did our space permit. We must, however, content ourselves with the following extracts, to which we invite careful attention, as they will well repay the trouble of perusal:—

As to the actual capacity of the State to sustain such numbers there can be no question. It has 20,000,000 of acres susceptible of high cultivation,

and under the present best modes of husbandry, these acres can be made to yield not only enough substantial food for 100,000,000 of people, but flowers to decorate the dressing-table of every female, and fruits to furnish a desert to every family for every day throughout the year.*

Here but one working hour out of five is required for the production of food. We have four-fifths of our population to be employed in other pursuits.

Now how shall these spare hours and this surplus labour be employed with most profit to individuals and with the greatest advantage to the whole?

Indiana is now emphatically agricultural. Up to 1843 its supply of agricultural staples was, on the whole, within her home demand. Since that period it has had a large and a largely increasing surplus, and its producers now look anxiously over the world for consumers.

Its neighbouring States are in the same condition; all of our staples are superabundant. Dearth and floods at home, and wars and famine abroad, afford us but insufficient relief—he is most fortunate who can first reach a deficient market. As we cannot hasten the rise of our streams, through which our produce finds a natural outlet, we are all entering into competition with each other in making canals and railroads towards the great markets of the world. When these are completed we shall find ourselves precisely as we were; away from home, on expense, and bidding against each other for the dollars of foreign hucksters. We shall then, as now, be fleeced on the way, plundered at the market, and, if we have any thing left, run the risk of being robbed on our return. The longer the road, the more numerous the dangers; the further from home, the fewer the chances of detecting imposition, and of bringing those to justice by whom we have been injured.

Even with railroads and canals, with every possible facility of transporting our provisions and breadstuffs to Eastern Europe, with far less profits on our capital, and with far lower wages for our labour, can we compete in France and England with the fifteen millions of serfs between the mouths of the Vistula and the Dnieper, who grow similar products for exportation? The noble land-holders of Poland, Podolia and Volhynia, do not allow their slaves to eat what can be sold. These districts, almost as fertile as our own, are now producing as much grain as will supply the deficient markets of Europe, and yet the traveller through them can hardly procure a wheaten loaf. Bring what it will, this grain must be exported and sold. The crop is like that of cotton—useless at home. Until, then, we can send our wheat and flour to Liverpool, at a less cost than the transportation of the same article to that port from Dantzic and Odessa, and then, until we reduce its price at home to zero, it is useless for us to enter the field of competition with Russian nobles and Polish slaves.

But we have one certain and speedy mode of relief. We have a labour-saving process by which we can avoid the waste of time and money now employed in carrying over the world the bulky and perishable articles we produce and the heavy fabrics we consume. We need not continue to pay strangers for watching our corn-cribs and meat-houses in foreign countries, for we can bring the mouths to our food.

The makers of anvils at Birmingham, of trace-chains at Sheffield, of plates in Staffordshire, of cotton cloth at Manchester, would come here and eat twice as much food as they do now, if they only knew that they could

* By Mr. Wakefield's estimate, an acre is capable of supporting more than five persons with food.

make anvils, chains, plates, and cloths as cheaply and well here as there. It is cheaper to pay the freight on advertisements than on axes and scythes. Pay some trifling bills to the printer, and these foreign consumers will soon hasten to our well-filled granaries. As fast as they come, they will do our shop work, and help pay our taxes. If they do not come fast enough, we must encourage our carriers to learn the use of the awl and the hammer. If the men who are now, directly and indirectly, engaged in the export of our bulky products, such as corn, and in the import of such heavy articles as trace-chains, were employed here in the fabrication of what should be made at home, we should save more every year than the amount we yearly receive for our entire exports. Should we, in process of time, make more plates and ploughs than we need at home, we can send the excess to Odessa if there is no market nearer. The products of skill will bear transportation, and pay high wages.

The fellahs of Egypt can sell wheat cheaper than we can, for they require but little money to pay their merchants and tailors. We shall always be underbid by the Ryot of India, for his native prince and his British governor will not allow him to put up a workshop. The serfs of Kiev drag their corn down to the Black Sea; the Jew speculator buys, and hires the lazy Greek to ship it to the London docks. While there, the Wabash planter need not expect his corn will be disposed of at a profit in the same market, for the serf has no holidays, the Jew is content with less profit on his capital than the factorage of the New Orleans commission house, and the appetites and desires of the Greek sailor are easily satisfied.

But, combine our food with cotton, wood, hemp, and iron, and you can send it to Moscow; to the sources of the Nile; and to the foot of the Himalyah Mountains; and while we grow rich, we can pay high wages to every intermediate agent.

Now, suppose the average increase of population in Indiana, for the next few years, should be 120,000 per annum, and that, of these, only 40,000 are productive, and are directed to new employments in which the average remuneration for labour would be seventy-five cents per day, the product is \$9,000,000, or two-thirds of the entire export of the State. Suppose, further, that manufacturing employments were provided, suitable for female labour, giving but twenty-five cents a day for 200 days in the year; the operatives being chiefly from the ages of 15 to 19; and the remaining 100 working days in the year being spent by these operatives at common schools. Fifty thousand females, whose labours are now almost entirely unproductive to themselves and the State, would gladly avail themselves of such opportunities of providing themselves with a dowry. The product of their labour for the year, would be two and a half millions of dollars.

It is beyond our power to calculate the effect that such an amount of earnings, such a saving of money and of such a home market would have on the values of land and labour within the State.

The premises that over-production lessens the value of the product, being granted, it cannot be said that the withholding the product of the surplus labour will lessen the value and quantity of the commodities obtained from abroad, or our ability to pay for what we should import, or the ability of foreigners to pay for our produce, which they require. Indeed, both parties would divide the savings made in the avoidance of the unprofitable carriage. Let the carriers, if too abundant, engage themselves in the production, instead of the transmission of wealth.

To illustrate my idea, let me suppose that we make our axes and import our watches. The whole manipulation about the axe may require two days of labour. That about the watch may require the labour of two

hundred days. The one worth one dollar and the other one hundred dollars. The carriage of the least valuable is one-half of its cost; that of the most valuable, including insurance, is not one-hundredth part of its cost. Now the savings on our axes and such heavy commodities, will enable us to buy and import the watch and such light and less bulky commodities. In buying the axe we support the foreign labour of two days. In buying the watch, we support, we buy, we give the equivalent of two hundred days. Thus, in precisely the same ratio that we save carriage and make our coarse fabrics at home, we have the means, and we furnish foreigners with whom we trade with the means, to render mutual exchange profitable; and in this way only can we keep up the prices of our labour, and take every possible advantage of the cheap labour of other countries; and thus arises the axiom, that a country that does not procure at home the necessities of life, has but a very limited ability of procuring the conveniences and luxuries of foreign fabrication.

The leading principle of political and productive economy in civilized countries is independence and the substitution of domestic for foreign exchanges. Progress is most rapid in that country which possesses and uses the elements for producing exchangeable commodities at home.

The most important and available coal formations are those of the United States, of north-east British America, of Great Britain, Belgium, and France.

Of the areas of coal, now known, those in the United States comprise one-seventeenth of the whole, or over 133,000 square miles. British America has 18,000 square miles, Great Britain about 12,000, Belgium 518, France 1719. Of the 133,000 square miles of coal in the United States, about one-half is the field of the central West, a part of which underlies about one-fifth of Indiana. This State, then, has 13 times as much as Belgium, $4\frac{1}{2}$ times as much as France, and two-thirds as much as Great Britain. The map, however, gives but a very imperfect idea of the respective values of these coal fields. In heavy and bulky articles *position* is every thing. The first boat made by Robinson Crusoe, after his shipwreck, was admirably adapted to his purpose, could it have been moved to its point of use. There is coal on the borders of the Arctic ocean, and there will be until the last conflagration.

The coal of Europe is on the whole inferior to our own in quality, and its position averages 500 feet "under the grass." The amount of labour and capital required to dig and raise this coal is greater than that which would be required to dig that of Vigo county and transport it to Indianapolis. But coal derives its greatest value from its juxtaposition to other minerals and materials with which it is to be combined, such as iron, copper, lead, timber, and the fibres of which cloth is made. The nearer these materials are to each other, the more valuable each becomes, if they are there combined, and they impart a corresponding value to the nearest food and labour.

If we institute a comparison between England and Belgium, and Indiana, in reference to the positions of their respective coal fields and to the source of supply of materials to be combined with the coal, the result may be full of encouragement to us.

Great Britain now produces yearly, 31,500,000 tons of coal, worth, at the points of production, about \$46,000,000, and at the points of consumption, chiefly within the kingdom, about \$100,000,000. The value of the iron manufactured by a part of this coal, is estimated at \$80,000,000 per annum, the value of her exports, produced mainly through the agency of her coal and iron, now reaches the enormous sum of \$250,000,000 per annum.

Let us now turn to the twenty-two counties of Indiana, which give an area of 7,700 square miles of coal—of that power which has proved so potent

in England and Belgium. It is safe to say that this area will average 50,000,000 of bushels to the square mile. Here we have the enormous quantity of 385,000,000,000 bushels, or an amount equal to eleven hundred times the yearly production of Great Britain. It will be remarked that *this power is just where it is wanted*, at and near the confluence of important streams. Nature has been very kind, and, in the course of years, has worn down convenient roads to and through these coal strata. The "adit levels" are the Ohio, the Wabash and White Rivers, and the natural is far more efficient than the artificial drainage. These streams, thus cutting the coal, extend through and to almost every county of the State, and afford cheap facilities of transporting bulky products to points where they can be combined with the power into forms of less bulk and weight and of greater value, and thus fitted to bear transportation to the best market.

It will be observed that, on the edges of this coal-field there is iron ore of greater yield and purity than that of England or Belgium; potters' clay equal to that of Staffordshire; lead, silicious earth, and alkalies to compare with any in Bohemia; here, also, is the best of marl, the best stone for building and manufacturing purposes; here, besides, is the soft freestone water, and, below the surface is, doubtless, brine of sufficient strength to justify boring through the superincumbent sandstone for the construction of salt-works.

There are very many other articles of which wood is the chief material, and, in the aggregate, costing a large amount of money, which should be made at home, and are now imported from most unnatural sources. For instance, pails and tubs; almost every steamboat which touches at the southern parts of Indiana brings nests of these articles made in the interior of New England.

Indiana now sends abroad her bulky and perishable corn and meat, which can be produced equally cheap by the ignorant Russian serf, to the extent of over one million of dollars a year in exchange for coarse fabrics of iron; such as axes, scythes, spades, and hoes, which are made of ore, and by coal far inferior to her own; and the loss on the carriage both ways is a self-imposed tax on her labour and capital. She not only sends the tree to New England, but she sends a thousand miles for the axe to cut down the tree, and across the ocean for the chain to drag the tree to the river. She is a producer and consumer, and as such pays the freights and loses the profits.

Of potters' clay she has enough of all the ordinary qualities to supply the world, and yet she sends to Staffordshire for her common plates, pays a duty of 33 per cent., a freight of over 50 per cent., and an extra profit corresponding with the distance of over 20 per cent. on an article which, considering the price of food and the difference in taxes, can be made cheaper on the White River than in Staffordshire.

There is now a new-born town on the Upper Ohio, called Liverpool, where coarse potters' ware is now made, and sold at half the cost of the imported article; and this is now forcing its way into common use, despite the opposition of dealers in such goods, who, like other merchants, make the highest profits on the most costly and distant-made fabrics. The farther the source of supply, the less chance has the consumer of detecting imposition.

The price of wool here, in its various grades of preparation, will average, perhaps, not over 15 cents a pound, and when it reaches the Eastern mill will average 25 cents; it is spun and woven into carpets, for instance, and becomes worth 80 cents; on its return to us it has advanced to \$1. Here distance has added 10 cents to the value of the material, which has been combined with 75 cents of foreign labour.

For the yard of carpet we pay first the one and a half pounds of wool, at

22½ cents ; to make up the 77½ cents, we send to the carder, spinner, and weaver of the carpet factory, a bushel and a half of wheat, or five bushels of corn, they paying the carriage.

Now, on good land, an industrious man will produce an average of two and two-thirds bushels of corn a day, and wheat in the proportion of one and a half to five. For this yard of carpet, then, we exchange nearly two days labour and one and a half pounds of wool. The actual capital employed to produce the former is actually less than that required to produce the latter. The carpet-weaver has spent no more time at the power-loom in learning the trade than our farmers' daughters have at the house-loom ; her labour is not as severe, and the quantity of labour employed by the girl in the fabrication of the yard of cloth is not one-half of that employed by the man in the production of the five bushels of corn. Our wool, in the Eastern market, is in competition with the wool of South America, and our wool growers are competing with the wool grower of South America, who pays nothing for land or pasturage, and has to support neither preacher nor teacher. He can produce as much wool without as we can with the schoolmaster ; but he has neither the power nor the skill to make cloth. We can combine a single pound of wool with the power, skill, food, wood, and iron, and send the yard of cloth to Brazil, and bring back in exchange for it 15 pounds of wool, and enough coffee to pay all the expenses.

To extend the consumption of cotton cloth, we must diminish its cost. This can be done by lessening the amount and cost of transportation. Then its joint producers can grow rich. The cotton crop is, say 2,200,000 bales—over 1,000,000 of these bales are required for coarse fabrics. 1,000,000 spindles and corresponding machinery will make these coarse fabrics. This machinery can be set in motion for \$75,000,000.

Were these fabrics made in Indiana, and at the most convenient positions, the savings in carriage of cotton cloth, food, &c., to say nothing of taxes, would exceed *twenty millions* of dollars a year. The incidental advantages to the West, attending such a change, would be expressed by a sum vastly larger. This would be the result of our manufacturing only the coarser, least expensive and least profitable goods, and the result is susceptible of proof in which there can be no uncertainty. Indiana could spare all the labour, and the South and the West could now easily furnish the capital, even if that capital was money. But if we made the machine-shops, and furnaces, and the rolling-mills, the money we should need would be merely the amount required to import our tools and patterns ; the remainder would be but the representative of labour, and the product would be the investment made by labour.

The Tariff.—Under the present tariff system, our market for goods with the frequent and rapid communication with Europe, must continue to be greatly influenced by the state of trade there, hence, the sudden changes in prices which we often experience, and the difficulty of forming reliable opinions as to the future. Should the tariff be revised at the next session of Congress, and the system of specific duties be substituted in place of the present uncertain *ad valorem* rates, we shall be less affected by the low wages and fluctuations in trade, of foreign countries.—*Phil. Com. List.*

To Destroy Thistles.—Mow the plants close by the ground, split open the root stalks, and put salt in the opening.

PROSPECTS OF THE FARMERS.

"IN the event of the harvests in Great Britain proving an average, the demand on our breadstuffs will not experience any important reduction, as the difficulties on the continent are likely to continue, and the usual supply from the ports of the Baltic reduced. Independent of this, the state of prices in our markets enables us to ship largely, with a prospect of good returns; and during the season of navigation on our rivers and canals, we can, without doubt, compete successfully in the markets of Great Britain, with any part of the continent, in the leading articles of breadstuffs."

We take the above from a journal that advocates the maintenance of the tariff of 1846, because it is of opinion that it is sufficiently protective of the farmers and planters in their efforts to draw to their sides consumers of their products, converters of food and cotton into cloth, or food and ore into iron—and we do so because we desire our readers to see the contingencies upon which depends even the maintenance of the present low prices of grain. If the people of Germany continue to make war upon each other, and to waste a great deal of food (and blood) THEN prices may be maintained; but suppose they arrive at a settlement of their differences, what then is to happen? That we are not informed, because it was obvious to the writer that such an event would produce a state of things among the farmers of the Union that must inevitably lead to a change of system. We are making a market for immense quantities of foreign food in the form of cloth and iron, and thus compelling our own producers of cloth and iron to become producers of food, while holding the market of England by the wretched contingency of a continuance of the existing state of war. Throughout the Union, the planters and farmers desire something like permanency, but their rulers insist on making them dependent on the caprices of the people, the banks, and the sovereigns of Europe, and the consequence is, that producers bear so large a proportion to consumers that we waste more labour and more food *than would pay for all the exports of England to every part of the world.*

The author of the above paragraph, in common with the late Commissioner of Patents, entertains no doubt that we can "compete successfully" in the great grain markets of the world with the serfs of Russia and the fellahs of Egypt. He thinks, however, altogether of the merchant—of the man who lives by commissions. To him, it matters little if the *producer* be ruined, provided the *exchanger* can make a profit. "The state of prices enables us to ship largely," says this free-trade advocate. And what is the state of prices? A bushel of wheat that has travelled from Chicago to New York, a distance of 1500 miles, is worth 73 cents, from which are to be deducted all the commissions and all the freights, leaving to the farmer probably about 35 cents. If the Baltic ports be opened, it may fall to 60 cents, at which price we may still perhaps "compete successfully" with the people of Poland, and Russia, and Egypt. So is it with cotton. We have ruined the poor Hindoos, and now our planters are being ruined. Labour has been *driven* into agriculture to such an extent as to produce a large surplus, and to render us dependent upon the chances and accidents of European affairs to such an extent as to make every pursuit a lottery, and the only remedy that occurs to our wise legislators is to adopt such measures as will diminish the home market and increase our dependence. It is certainly time that the planters and farmers should begin to think a little of the politics of agriculture. When they shall do so, they will learn that the nation that is least dependent on distant markets can obtain the largest prices in those markets, and that the only way now left to raise prices is to increase the power of home consumption.

THE FARMERS' NOTE-BOOK.

How "MONEY MAKES THE MARE GO"—and how it may be profitably employed in ploughing the land as well as in ploughing the ocean. The Committee of the Montgomery County (Md.) Agricultural Society awarded the silver goblet for greatest improvement in five acres of land to Benjamin Hallowell, notwithstanding he failed in his promise to give us a sketch of his experience in the use of bone-dust, lime, guano, &c., as the means of judging of their comparative cost and value! The award was founded on the following certificate—see June number of the American Farmer :

A Lot of Five Acres, most of barren rock-land, (poor old field,) clay soil, stiff and stony.

In 1843, latter part of winter and early in the spring, it was ploughed and limed, 50 bushels per acre; in May, 10 bushels of bone per acre was applied, and the field planted in corn, putting poudrette in the hill at the rate of one and a half barrels per acre. In September the corn was cut and hauled off, and the land dressed, one acre with guano, one with poudrette, and the rest with bone, at a cost of \$8 per acre on the farm, and in wheat and timothy.

Cost of Manures.

250 bushels of lime - - - - -	\$62 50
50 bushels bone, on the farm - - - - -	25 00
7½ barrels poudrette, on farm - - - - -	15 00
Manure for wheat - - - - -	40 00
Plaster on grass - - - - -	2 25
Cost of putting in and cutting corn - - - - -	18 75
Putting in wheat - - - - -	11 25
Seed wheat, 10 bushels - - - - -	10 00

\$184 75

Crop.

Corn, 250 bushels - - - - -	\$125 00
Wheat, 100 bushels - - - - -	112 35
Three crops of grass, 20 tons - - - - -	200 00
Clover seed, 7½ bushels - - - - -	37 50

\$474 85

The land now appears made, having on it a very large second crop of clover and timothy, both in head.

RICHARD S. KIRK, for
BENJAMIN HALLOWELL.

ON PLANTING TREES.—Sir Walter Scott makes the Laird of Dumbiedikes give to Jock the advice we would give to every farmer, young or old:—"Jock," said he, "when ye hae naething else to do, ye may be aye sitting in a tree; it will be growing, Jock, when ye're sleeping."

The most exemplary tree-planter that we remember at present was the late General T. M. Torman, of Maryland. He planted llickory-nuts and chestnuts in great numbers, up to the time that he was 80 years old. We remember his expedient for propagating the beautiful Scotch broom, which so splendidly ornaments the roadside for a mile of poor soil on the Annapolis road. The general was in difficulty to hit upon the right time to sow the seed, to ensure success. So he made his overseer make a small rent in the bottom of his pantaloons' pocket, and told him to fill the pocket as often as it emptied itself. Away went the overseer, thinly scattering the seed over all parts of the plantation, at various seasons of the year, until dame Nature was caught in the proper mood for the work of propagation; and the result was nothing less than is to be expected in such cases.

In the Transactions of the Essex Agricultural Society, (Mass.) for 1848, there is a valuable report on Forest Trees—the substance of which we will

give in a substantive article. It closes with the following striking passage:—

Even if we are indisposed to re-create the forests which have been wasted, we may some of us be induced to adorn the roadsides near our dwellings with trees. As they grow in size from year to year, they creep into our hearts' best affections. Our associations become connected with them; our children grow up with them, and learn to love them, and our children's children may enjoy their shade and gambol beneath them. Indeed, as compared with the life of man, the trees which he plants soon assumes a superiority over him. From his tender nursing, it springs into existence and becomes his shelter and his protection, and will continue to shelter succeeding generations long after he is gone and forgotten. *The tree under which Washington stood, when he first drew his sword to take command of the army at Cambridge, is still vigorous and flourishing as ever, while all of that gallant band of patriots have passed away.*

DRAINING.—It is not land alone that requires to be *drained*; for though there is scarcely a farmer who does not leave more or less of his *best* land undrained, and therefore unproductive, losing for ever the interest on the money he values it at, yet it has been well said, that “a general enlightened education is equally necessary, *to drain the farmer's mind of obsolete prejudices.*” And the best system that could possibly be established is exactly that which is taught to those elected for West Point, (there to be educated at the farmer's expense,) only substituting the art of *tillage* for *tactics*. All else is exactly adapted to prepare the student, in the most efficient manner, to become an active, valuable citizen—useful and honourable to himself and his country. A West Point education makes him a botanist in a measure, a geologist, a chemist, a mathematician, and a civil engineer; prepares him to examine the qualities of land, the strength of timber, to build roads, and to plan canals, and to construct bridges and farm-buildings, and to pronounce on the proportions of parts and the value of materials. All this is the fruit of a government West Point education, and every farmer of sense and spirit should insist on one school in each State, where men should be reared to go out annually all over the country, carrying with them this sort of knowledge, and prepared to teach in the common schools.

NORFOLK (MASS.) AGRICULTURAL SOCIETY

WILL hold the first of its annual meetings at Dedham, on the 26th of September next. It needs no better auspices for a prosperous existence than coming into life under the presidency of COL. M. P. WILDER. If it can't conquer under *that* sign, it may as well give up the ghost.

In Massachusetts there's no use in saying that a place has the advantage of being near to another place—as Dedham to Boston, for instance—for there, with their railroads running everywhere, and crossing everywhere, every place is near to every other place. There's no such thing as distance, if we refer to time; and then they carry you so cheap, as well as quick—not less than twenty-five miles an hour anywhere, for two cents a mile. Every one is interested in railroads and factories, and all support them. We saw fifteen hundred men come by a single train, more than forty miles, to Worcester, by 9 o'clock A. M., to the cattle show, to be taken back to Providence that afternoon, all for less than \$1, through tickets. From Baltimore to Washington they make you pay \$1 80 to go forty miles, at a rate less than Trustee trotted his twenty miles, within the hour.

Not only travelling, but every thing, is cheap in New England, and that's the way every thing thrives.

OYSTER SOUP IN MASSACHUSETTS.—HOW THEY MAKE, AND HOW THEY SELL IT.

At the last cattle show at Worcester, away out in the heart of the State, we saw a chap standing against the side of a house, hemmed in by a long counter on three sides, and on the counter, "all in a row," a deuced sight of small pint, common delf bowls. What, thought we, in the name of wonder, is that fellow after, with all these bowls? So we took a peep into the bottom of one, and there was a mite of butter, a spice of pepper, and a thimble-full of salt—all waiting, for we couldn't think what. But presently, half a dozen land-lubbers came up, each calling for his bowl of oyster soup. So we kept our eye on 'em; but how was the oyster soup to be so readily had? The problem was soon solved. Jonathan snatched up a large hard cracker, and with one half turn between his hands, in an instant ground it into bits—threw one cracker into each bowl, on top of the butter and pepper and salt already there, cut and dried; and then, turning half round, seized the long handle of a kadle, and as quick as thought, from a kettle behind him, filled each bowl with *hot oyster liquor*. The countrymen each seemed to relish his soup, guessed it was pertickler nice, paid their four-pence, and went their way, all parties well satisfied. Now perhaps the oysterman made one cent on a bowl, but then he sold to hundreds; and so it is with their railroads, and every thing else. They charge little, but *they do a great deal*; and all their roads, and factories, and banks are popular, for they serve the convenience of all, and all feel interested in their permanence and prosperity. Ah! they are a wonderful people, those Yankees! They know the benefit of having the loom and the anvil near to the plough.

SECOND ANNUAL FAIR OF THE MARYLAND STATE AGRICULTURAL SOCIETY

WILL come off at Baltimore on the 10th, 11th and 12th of October next. In the "Supplementary Sheet" of "The American Farmer" for July, containing a list of prizes, there will be seen, on the part of the President and Trustees, every disposition to make it as comprehensive as possible; and if, in some departments, as in those of *Implements and Machinery* particularly, the amount of prizes bears no proportion to the importance of the objects, and cannot be supposed, in itself, to form an active stimulus to invention, or recompense for the trouble and expense of exhibition, the reason is not from any failure to appreciate the value of labour-saving implements or machines, but for want of funds to propose a more adequate stimulus for their production. The truth is, that in this, as in all the departments, the reliance must be rather on the patriotism and public spirit of the friends of the cause, than on any means which the Society has, or can hope to have, to make equivalent pecuniary recompense to the exhibitor. The worth of the premium consists in the *stamp of approbation* impressed by the sanction of committees chosen, as on this occasion they have been, not with a view to give currency to the stock or other commodities of particular individuals, (potential, as in some Societies, by their official positions, and connection with particular cliques,) but with impartial reference to their qualifications, and under an abiding desire to do justice, and to justify confidence and respect for the result.

In our judgment, far above all are they entitled to notice and distinction,

and the public respect, who make such discoveries in the chemical or mechanical philosophy of agriculture, as will enable the farmer to obtain, at less cost, greater returns from his land. When public sentiment shall be thus prepared to exalt men who invent new manures, and new machines, above the heads of political demagogues, then, and *not till then*, will agriculture have gained and be prepared to maintain its just ascendancy over other and more limited interests.

This, by the by, is the season of the year for hatching out that numerous brood of the human family—*candidates for office!*—*dear, disinterested, loving friends of the people!*—and especially of the *honest, hard-fisted yeomen of the country!!!* Biennially, the summer solstice seems to warm and quicken these gentlemen into a keen sense of devotion to the sovereigns, and thus, as autumn approaches, you will see them, as they come out of the ground, in the grub state, take wings, and, flying to the top of a neighbouring stump, proclaim themselves the exclusive friends of the *landed interest*. If, then, they ever mean to do it, let the farmer and the planter, disregarding mere party names, now call upon these biennial patriots to say what they will do, if elected, to procure *appropriate instruction in the principles of agriculture*—as much, at least, as is now given, at the public expense, in the use of the cannon and the sword. Every true friend of the plough should give a cold shoulder to all candidates who hesitate or boggle about refusing money for military, until as much, at least, is given for agricultural education.

May we not hope that at the meeting of the Maryland Agricultural Society, in October, we may be favoured by each member of the last Congress with a written report, to the President of the Society, not of what he *thought* of doing, or what he *wanted* to do, but of *what he did*, in compliance with the resolutions passed at the last meeting, and promptly communicated and urged upon him by the President of the Society? Where men are not called on to account, they soon lose all sense of responsibility, and are too apt, “any how you can fix it,” to consider the requisitions made upon them by agriculturists as so much waste paper, to be disposed of to suit their own convenience.

But we have only time to say further, that every farmer in Maryland ought to feel himself bound to augment this exhibition in every department that he can. The mischievous error in such cases is, that too many come as mere spectators, without even becoming members of the Society, and even those who do, hold back from exhibiting any thing, because they are not *sure of excelling*—while the fact is, that he who sends the best he has, though it may be inferior, is very often entitled to more credit than some who win prizes merely by repleting a few animals or a few acres with excess of food or manure.

No Society of the kind, ever yet organized in our country, has given higher promise of achieving useful results; and although it is not yet possible to foreshadow the valuable fruits it may yield in the progress of its growth, enough is already discernible, in the spirit of inquiry and improvement which is obviously spreading over the land, to justify the suggestion and the hope that every man will feel himself called upon to do what he can to *add to the elements of its existence and usefulness*. But, let us hear from those dear lovers of the landed interest—the would-be legislators of the land! Let them be made to know that when the farmers congregate from all parts of the State to promote their common welfare—what they say *they mean!*

AMERICAN FARMERS, IN THE EYES OF ENGLISH TRAVELLERS.

A MR. JOHN A. WHITAKER, an English farmer, has just returned to his country, from a tour in the United States and in Canada. He publishes a long letter in "The Mark Lane Express," in which he says:

The American farmer purchases the fee-simple of his property at 5*s.* per acre. Until the English market was opened to him, he could merely gain a comfortable existence, and but little profit otherwise on his capital.

He pays no Tithes; no Church Rates; no Poor Rates (in the West); no Income Tax; no Highway Rate, in money; no Turnpike Tolls, with few exceptions.

The Americans are jealous of the supremacy of England in commercial and manufacturing affairs; and as a nation in its youth, this may not be unreasonable.

To my astonishment, in that untaxed country, I found the general feeling in the North and West in favour of greater protection to interests which are already protected. They are nearly unanimous in opposition to the tariff of 1846, which is favourable to Great Britain.

They say, "We are an untaxed people, comparatively, and we can afford to set aside the general rules of political economy, and render America, through protection, self-productive of most articles, and thus independent of other countries." The cotton grower of the South is alone opposed to this feeling, and his power, based on slavery in this respect, is, thank God, rapidly on the wane.

The Whig or Conservative party have just succeeded to power, and by almost an unanimous vote of the nation, raised General Taylor to the Presidency. The President, in his inaugural address, has nearly pledged himself to greater protection to native industry.

Mr. Lawrence Abbott, the most extensive manufacturer at Lowell, was offered the embassy to England, and this offer was supposed to intimate the view the administration take of the tariff of 1846.

WHEELING (VA.) SILK MANUFACTORY.

THE editor of "The Wheeling Gazette" has been examining the stock of silk goods manufactured from the cocoons, at the Wheeling Silk Manufactory of John W. Gill, Esq., and is really surprised to find that goods so beautiful in texture and colour are produced in Wheeling, or, indeed, anywhere in the United States. In their texture, particularly, he thinks them superior to most imported articles of the same sort, certainly so far as *durability* is concerned. Mr. Gill is first, if not the very first, to establish the manufacture of the finer silk fabrics in the United States.

There is a very considerable silk manufactory at Paterson, New Jersey, of the operations of which we shall give an early account. Considerable quantities of silk were exported from the South, particularly Georgia, before the Revolution. That is our true silk and fine wool region. The culture of silk there would be much more feasible than that of tea—of the culture of which, in the Carolinas, we have accounts near thirty years ago, in the old "American Farmer." We distributed tea seed there, for that purpose, ourselves, twenty-five years ago, or more. *It won't pay*—but silk would, under proper encouragement. In 1840 we produced 61,552 pounds of cocoons in twenty-nine States and territories.

[From the Report of the Commissioner of Patents for the year 1848.]

REPORT OF THE SENECA COUNTY AGRICULTURAL SOCIETY.

To the Executive Committee of the New York State Agricultural Society :

THE agricultural condition of the county of Seneca through the past year (1848) has been much improved ; the cultivation of the soil has received more careful attention than for many previous years, and the barn-yards and manure heaps are better managed ; a necessary consequence is cleaner fields, with larger crops.

Seneca county is more devoted to the cultivation of wheat as a principal product than any other grain, yielding annually about 550,000 bushels. The cultivation of Indian corn has increased within two years, and may be estimated this year at 400,000 bushels. The oat crop is unusually large, amounting to about 400,000 bushels. Barley is not extensively cultivated, but may amount this year to 120,000 bushels.

Heretofore the Hutchinson wheat has been preferred to other varieties, and fully maintains all its excellencies ; the Soule's wheat has been much increased, and finds additional advocates from year to year. During the past season many farmers have cultivated a wheat from Ohio, which has yielded a good return, but needs more experience, to be adopted in competition with the Hutchinson or Soule's varieties. The product of this county in wheat will average about 20 bushels per acre, and as compared with the crop of 1845, the excess of this year is equal to 14 per cent.

The demand for Indian corn for export in 1847, has given an impetus to the cultivation of that grain hitherto unknown in this county. Until within a year or two it was a neglected plant, many farmers doubted the applicability of the soil to a full development of corn ; now, however, it seems that large crops yielding a high average are produced. The quantity raised in 1841 was 178,674 bushels ; in 1845 we produced 205,000 bushels ; and the crop this year is probably 400,000 bushels. The average yield per acre is 32 bushels, and fast increasing, as we have many farms which produce at the rate of 60, 75, and 80 bushels per acre.

The oat crop, as stated, is very large and good this year, the opening spring having been very favourable. As an example, the town of Lodi produced, in 1845, about 26,000 bushels of oats, and this year the crop in that town is 50,000 bushels. The adjoining town of Covert will present an equal yield of this grain. In 1845 the oat crop was 292,397 bushels ; this year the county produces 400,000 bushels.

Barley has deteriorated in this region generally ; the quality of the barley produced this year is believed to be inferior to that of last year, and the grain less in weight per bushel ; the straw, when harvested, exhibited a shortness and feebleness unknown heretofore. This grain has not at any time been a favourite object of cultivation in this county, and probably receives less attention than is due to it. As a crop, it consumes from the soil a far greater amount of its riches than the more valuable wheat plants, yet by a proper cultivation the product per acre of barley may be raised so high as to give an equal profit with wheat, and prove a powerful aid to the farmer as a spring crop, occupying his ground little more than three out of twelve months. The deterioration of the seed in this section has induced the attempt to introduce, direct from England, the Cheltenham *barley*, which is a variety of the six-rowed, and said to weigh over fifty pounds per bushel at all times. The average yield of barley this year will not exceed twenty-one bushels per acre.

Rye is favourably cultivated in the towns of Junius, Tyre, and Waterloo, where our enterprising farmers have a lighter soil than other portions of our county. The crop exceeds the usual average about one-fifth; it is not large, as the more important articles of wheat and corn take a prominent precedence.

The very favourable state of the atmosphere during the spring months, and at the season of the hay harvest, enabled the farmers to secure more than an average crop of hay, probably one-third more than the previous year. An annual loss is incurred on this crop by the too late ingathering of the timothy hay. As the grass ripens here generally at the period of our wheat harvest, it is cut too late; that is, not until the seed has nearly ripened, and when the straw and leaf has parted with most of its nutritious power. Either a greater supply of agricultural labourers, or more perfect agricultural labour-saving machinery, must be presented to remedy this annual loss. The crop this year may be estimated at 38,000 tons.

Buckwheat is raised to some extent, and frequently as a green crop for ploughing into the soil as a manure.

The Potato crop has suffered much from the disease usually called the rot; a disease beyond the comprehension of any one in this section, and without any known remedy. There are several farms on which it has not yet made its appearance, while on the farms adjoining it appears in its most destructive form. Neither the mode of cultivation, the composition of the soil, nor the position of the ground, nor the observations of careful men, offer any reasonable conjectures for results so widely different. The whole crop of the county this year will not probably much exceed 200,000 bushels.

Flax has for many years been a source of early income, and the proprietors of oil mills have offered inducements for its cultivation. As, however, the exhaustion of the soil by this plant is from year to year better understood, the cultivation falls off—in several towns in this county it is wholly abandoned; for it is ascertained that the elements of flax makes a heavier draft on our soils, for the growth of the plant, than any other, and without giving any compensating return; while, for its proper cultivation and full development, it requires a high degree of manuring, which can be applied with more enduring benefits to the cereal than to the oil producing seeds.

Much and increasing attention is given to the propagation and production of the best varieties of fruits; extensive orchards have been planted during this year, and more careful pruning of the older orchards has been practised. One of our excellent farmers in Seneca Falls has established a peach orchard of great extent, besides other fruits. Another enterprising farmer in Fayette has planted an extensive pear orchard; so, likewise, in every town in the county has every choice variety of fruit been cultivated and extended.

For many years the apples of Seneca county have found an extensive demand and ready sale in Albany and in the city of New York, at an average cost here of twenty-five cents per bushel.

There is one exception to the general and successful propagation of fruit; the plum trees have suffered severely; and in some places have been totally destroyed by the worm, which causes the unsightly excrescence commonly called here the "black blotch."

Timely care and pruning would probably have prevented this disaster, and we have reason to hope that our farmers will hereafter examine into and study the causes of such frequent and mortifying losses, most or all of which are inflicted by the insect tribe. And here I would state that we have, from time to time, suffered much from the Hessian fly, and the grain moth; their ravages have, in many instances, been extended to our crops of barley. The grub, and the wire-worm, annually diminish the profits of

many of our industrious farmers, and as often do we quiet our murmurs by the comfort of hope for exemption hereafter—a vain hope, unless we cautiously examine the habits and changes of the countless insects which naturally infest our fields and crops. This remark is called for, because notice has of late been drawn to the destruction of grass in meadows, wrongfully attributed to defect in the soil; for the insect aphid has been found in numbers beyond enumeration, all of them feeding on the herbage of the field. That the remedy is within the easy reach of the farmer there can be no doubt; and there are many who, from precaution, do not suffer materially.

We owe many thanks to the several gentlemen connected with the State Agricultural Society for the information derived from them upon this subject, and indulge the hope that the agriculturists of this county will benefit by it, and in time add to the knowledge on record.

It may well be doubted whether any particular variety of wheat is exempt from the attacks of the insect tribe; the same variety which was reported to withstand their ravages during one season has fallen before them in another.

In this wheat-growing region the dairy receives that attention only which will supply the farmer with the needful milk and butter for his establishment; and it may be stated that the county barely produces a quantity sufficient for the supply of its population. The product of butter in 1845 was 816,000 pounds, giving an average of about thirty-four pounds per head, per annum, to each inhabitant. The quality of the butter is generally excellent, causing a demand which will naturally affect a better supply.

The stock of Seneca county is good, the prevailing breed being the Durham or short horn, from stock imported from England; and also Devonshires. The cross of these cattle with native cows is found to produce good milkers.

Much attention is paid to the breeding and raising of horses, and they improve yearly.

The sheep of this county are, for the most part, merinos of fine wool; the fleeces average $3\frac{1}{2}$ pounds each. The low prices of wool through the present year has induced many farmers to reduce the size of their flocks, a course probably improvident; for, upon a careful examination of the subject, we have reason to believe that a remunerating benefit can be derived even at present prices. More careful foddering of the flocks under shelter through the winter months, and more economy in the mode of feeding, will probably meet the difference in the market values of wool. The number of sheep in 1845 was 72,000; they now amount to 71,000.

Swine offer but little inducement for their propagation, except to consume the offal of the farm. The stock mainly consists of Berkshire, Byfield, and the common swine. Recently, a boar and sow direct from China have been introduced into the county, and a cross established with the Berkshire. The result is a breed called Tonquins; they have the small bone of the Chinese sow, consume but little food, lay on fat very readily, and at the age of fourteen months they average about three hundred pounds each, running at large.

The introduction of well-constructed farm machinery and implements has undoubtedly contributed much to the improved condition of this county, and enabled the farmers to obtain larger profits by means of the great *saving of manual labour and of time*.

Among the most important of these machines is Hussey's reaping machine, many of which were used here, for the first time, during the last harvest. By the aid of this reaper, with the previous use of the cultivator

named below, *several* farmers have been able *to raise* and prepare their wheat *for delivery*, in perfect order, at a cost varying from twenty-six to thirty cents per bushel.

The cultivator alluded to was introduced among us by Mr. Tracy, of Newark, in Wayne county; it is an improvement on Ides's patent, which our farmers find an admirable implement; twenty-three were put into active use the past season.

The recent improvement in the plough by Mr. Burrall, of Geneva, and other men of sound scientific and mechanical knowledge, has materially abridged our labours in the field; while the stock feeder has been no less benefited by the corn and cob crusher of Pitts and Sinclair, and the valuable portable grist-mill of Ross and Co., of New York, by means of which the food for a large stock of cattle is prepared in a short time, as well as meal and flour for domestic use. Another advantage has been obtained from the use of Ross and Co.'s mill, by converting all the foul seeds collected from the wheat crop by the fanning-mill into a highly nutritious meal and food for cattle, thus avoiding the reproduction of pigeon-weed, cockle, summer grass, &c.

An attempt has been made to collect the agricultural statistics of this county, under the auspices of the county society; the returns or reports from the several towns are transmitted herewith. They are not presented as entirely correct, and must be received as the nearest approach to the truth which can be had, until the legislature shall adopt the easy and more accurate method of annual returns from the whole State, through the instrumentality of the town assessors.

The great importance of information thus derived must be admitted by all; for it is the test and very foundation of the principles of political economy. It gives us the condition of our whole State, and the comparative advantages of each county. By this knowledge spread before us, we more readily avail ourselves of the benefits enjoyed by our sister counties, and impart to them any peculiar benefit possessed by our own. True, this is a very narrow view of the importance to be derived from official reports of the condition of our State; but even this renders it very desirable.

From the several town reports a table has been compiled, and herewith transmitted, exhibiting the principal products of Seneca county for the year 1848, the number of acres devoted to the several crops, the quantity of seed sowed per acre, the quantity raised per acre, and the cost of production per acre; from these data and others given, the profits derived from each crop are ascertained and noted both per acre and per bushel. In the estimation of the profits, neither rent nor interest on the cost of the land has been included. Various valuable inferences may be drawn from a careful examination of this table.

Thus you have a general view of the agricultural condition of this county, which, if incorrect, will be found to err in the endeavour to undervalue quantities. The gradual improvement in cultivation is manifest, and a commendable strife for excellence and neatness in our agriculture is openly shown by very many of our excellent farmers.

The annual fair and cattle show did not draw out as large a number of our farmers as upon some former occasions; nor could it be expected that they would drive their cattle and other stock through roads rendered heavy and wet by a continuance of rain for several days preceding the celebration; nevertheless, the exhibition was highly respectable and interesting. The annexed report of the Secretary will detail the proceedings of the Society.

The Treasurer's account and vouchers have been forwarded to the Comptroller of the State, and exhibit an amount of cash received from mem-

bers equal to \$192.25, and from the Treasurer of the State \$74 ; making the aggregate receipts to be \$266.25. The amount of premiums and expenses paid is \$221.61 ; leaving a balance in the Treasurer's hands of \$44.64.

In conclusion, it must not be omitted to state that the distribution of the Transactions of the State Society is shedding a vast benefit on this county ; they are sought with avidity, and perused with care and industry, causing discussions, and inculcating lessons not to be derived from other sources. This annual work from the State Society has, in very many instances, provoked an appetite for agricultural and horticultural knowledge, and induced many to seek more frequent contributions of facts connected with farming, and thus has been the means of extending the thinking and reasoning class of men who examine the pages of "The Cultivator," "The Genessee Farmer," and other publications so zealously devoted to our farming interests.

From these sources science is made to confer lasting benefits upon us, driving away and steadily diminishing the misty baleful influences of ignorance and empiricism.

J. DELAFIELD,

President Seneca County Agricultural Society.

December 30, 1848.

Wages, with Board and Lodging.

Towns.	Per month.	Per year.	Per day.	Per week to females.
Covert . . .	\$8 to \$13 .	\$100 to \$120 .	\$0.50 to \$1.50 .	\$0.50 to \$1.25
Fayette . . .	. 8 to 12 .	. 100 to 120 .	. 50 .	. 50 to 1.25
Junius . . .	. 10 to 15 .	. 125 .	. 62½ to 1.50 .	. 50 to 1.00
Lodi	. 9 to 13 .	. 100 to 140 .	. 50 to 1.50 .	. 50 to 1.50
Ovid	. 9 to 13 .	. 100 to 144 .	. 50 to 1.50 .	. 50 to 1.25
Romulus . .	. 10 to 13 .	. 100 to 140 .	. 50 to 1.75 .	. 50 to 1.50
Seneca Falls .	. 9 to 12 .	. 100 to 150 .	. 50 to 1.50 .	. 50 to 1.25
Tyre	. 8 to 14 .	. 96 to 140 .	. 50 to 1.50 .	. 50 to 1.00
Varick . . .	. 10 to 12 .	. 100 to 140 .	. 50 to 1.50 .	. 50 to 1.25
Waterloo . .	. 10 to 12 .	. 108 to 140 .	. 50 to 1.00 .	. 50 to 1.25

Aggregate Results as to Seeds only.

Kind.	No. of acres.	Quantity produced.	Whole cost of production.	Market value.	Amount of net profit.
Wheat	35,100 .	644,960 .	\$314,800 .	\$709,456 .	\$394,656
Barley	5,771 .	124,195 .	26,721 .	62,097 .	35,376
Oats	10,736 .	411,650 .	49,563 .	102,912 .	53,346
Rye	2,200 .	28,750 .	6,940 .	20,125 .	13,215
Buckwheat . .	4,348 .	76,940 .	13,754 .	38,470 .	24,716
Indian corn . .	12,756 .	409,480 .	91,902 .	184,266 .	92,364
Flax	772 .	6,884 .	3,236 .	6,884 .	3,548
Grass seed . .	6,348 .	14,033 .	19,044 .	42,099 .	23,055
	<u>78,031</u>	<u>1,716,892</u>	<u>525,960</u>	<u>1,666,309</u>	<u>640,279</u>

Upon an examination of these results from seeds produced in Seneca county in 1848, it appears that the whole number of acres employed in the production of 1,716,892 bushels is 78,033 acres, from which has been derived a net profit of \$640,279. This shows an average net profit of \$8.20 per acre, or 16½ per cent. on capital invested in lands thus employed, costing fifty dollars per acre.

[We regard the above as a model in its way—the fruit of a superior mind, devoted with praiseworthy zeal to the cause of the plough. There ought to be in every State an agricultural bureau for obtaining such returns. But is not the real question, what average interest the farmer gets on *all* his capital in land—not on the acres that happen to be in wheat?—*Ed. P. L. & A.*]

THE WOOL TRADE.

"THE WOOL GROWER," as our readers know, is a monthly journal of sixteen pages, published at Buffalo, at 50 cents a year, and edited by T. C. PETERS, Esq., who has established a wool depot, in regard to which he says:

"The wool is sorted by the fleece, and various grades made, according to the wants of the trader. Full-blooded Merino wool is considered the standard, and is No. 1. From this we grade down to No. 5, which is the coarsest common wool. Full-blooded Saxony is as Prime 1, and from that we obtain *extra* and *super*.

"Out of the medium grades we sort a peculiar kind which must be of a long, strong staple, which is used for de laines. For this kind of wool I have an order to the full extent of all I can get in.

"The charges are one cent per lb. for receiving, sorting and selling, and insurance, which will be 25 cents per \$100 for 3 months or less.

"Sacks will be furnished at 75 cents, and 37 allowed if returned in fair order. Sacking will be furnished at from 10 cents to 12 per yard. Also a large assortment of wool twine will be kept constantly on hand.

"Advances will be made at the usual rates. All wool sent to the depot must be plainly marked with the owner's name."

When will the growth of wool and the establishment of such depots in the South encourage and sustain each other? We should like to see the commencement of an attempt in Philadelphia, Baltimore, Norfolk, Wilmington, (N. C.) Charleston, and Savannah. They might be connected, as in the case of Mr. Peters, with agricultural stores.

"The Plough, the Loom, and the Anvil" is sent regularly to "The Wool Grower," but whether received or not this deponent cannot say, not knowing.—Ought not "The Wool Grower" to come out sooner, or alter its date? The following are extracts from his July "REVIEW OF THE WOOL MARKET:"

"The amount of wool going through our canal indicates pretty clearly that it has been bought up more rapidly, and sent forward freer than at any former period. The wool going East from this point, to 27th June, as appears from a statement kindly furnished at the Canal Collector's Office, was

	1849.	1848.
From this State . . .	103,106	137,902
" Canada and West . .	1,373,622	737,126
Total . . .	1,476,728	875,028
By railroad	100,000	
	<u>1,576,728</u>	

Making an increase of this, over last year, of 701,700 lbs. The entire shipments from this point East, by canal and railroad, for the year 1848, equal about six millions of pounds, so that up to the first of July, the shipments will make full one-third of all that went forward last year. We must add to this, also, the increased quantity which has gone from this State. For, although the shearing has been uncommonly late, yet the wool has been bought up with great rapidity, and is on its way to the manufactory, or to the dealers in the Eastern cities.

"As we have remarked in another place, and, as is stated by our correspondent from Boston in the last number, there is no 'rubbing out the fact,' that we do not grow wool enough in the Union for our own home consumption. And if the mills can have active employment through the balance of the year, they will lack full two months' stock, which must be supplied by foreign wool.

"We predicted that cloths would not advance before July; cloths have already advanced; the market is becoming firmer, and for the next three months, there will be a steady advance, until prices will touch a point that will induce orders for foreign goods. The recent news from California is of that character, that we can have no doubt as to the immense supplies which must be furnished from this part of the Union. The whole coast of the Pacific must, to a great extent, be so supplied. Our proximity defies com-

petition. The wants of the market there are now well understood, and many manufacturers are already turning all their power upon the production of the proper fabric. The vast field which is thus opened to our enterprise will absorb all our supplies for an indefinite number of years. Gold there has begun to depreciate, or, in other words, the price of all kinds of property has enormously advanced, and the rise will be felt now, with increasing intensity.

"Wool must advance in price. It may be dull of sale, for July and August, but it should not fall off in price. We advance our depot price, 2 cents per lb. for all except the choice sorts. For very fine wool there will be no adequate price paid, until very late in the season. We consider it very unfortunate for all concerned, that fine wool has brought so low a price, for the last two years. Thousands of fine woolled sheep are being sold to the butcher, and their places supplied by coarser woolled, and, for the present, more profitable sheep. When prime Saxony wool must be sold under 50 cents per lb. it is no encouragement to grow it. Our fine wool manufacturers will be compelled to go to Germany ultimately for their stock, with how much profit, time will determine. We hope those who are able to keep up good blood will do so; but small farmers, we cannot advise to go beyond good grade sheep; say one-half to three-quarter blood."

RULES FOR THE APPLICATION OF MANURE,

DRAWN FROM THE WRITINGS OF THAT PROFOUND PHILOSOPHER—
VON THAER.

WE much question whether one farmer out of a hundred ever entered into any calculation to inform himself about the weight of a given measure of manure; yet how, without such calculations, can he tell whether his cattle are over or under-loaded, or his land over or under-dunged? Is there any business on this earth conducted with so little pretence to exactness, as that of agriculture? But how can it be otherwise, when there is, for it, no pretence of education, or systematic accounts of any thing—when, in fact, the idea is that any fool may make a farmer?

The real value of manure is increased by the fact that it progressively augments itself, and that, besides the produce it yields, an extra quantity of manure will, if properly bestowed, never fail to produce the elements of a fresh supply, so that it will soon be possible to cultivate those plants, successively, from which the largest sum of money may be realized. On the other hand, the manure diminishes in like proportion, if a scarcity is allowed to be felt, and an immediate and suitable remedy be not found and applied. One of the consequences of a scarcity or diminution of manure is a scarcity of straw; and where there is little straw or fodder, little dung can be obtained, and thus the quantity of manure progressively dwindles away until the soil becomes totally exhausted.

However expensive it may be to bestow this first quantity of manure on a soil which has been impoverished, there certainly is *no capital better employed than that which is expended in this manner.*

The usual load for a wagon drawn by four horses is thirty-six cubic feet of stable manure, half reduced, and in the state in which it is usually applied to the land. In this state, that is to say, when the straw has become soft and disorganized, without being wholly decomposed, and the dung is moist, yet not very watery, a cubic foot of it will weigh 56 lbs.; therefore a load of 36 feet contains 2016 pounds, which, for the sake of obtaining round numbers, we will reduce to 2000 pounds. Where the roads are good, and the weather favourable, this load may doubtless be increased; but, as a

period of fine weather is seldom chosen for carrying manure, this quantity will in general be found to be tolerably correct.

If the straw is not decomposed or altered, a cubic foot closely packed will not weigh more than 48 pounds, and in this case the volume or size of the load is increased, and contains from 45 to 46 cubic feet of manure.

When eight of these loads are distributed over an acre of land, it is considered that a good covering has been given. Each square perch then receives 88 pounds of manure, and each square foot nearly six pounds. If only five of these loads be allowed for each acre, as is generally the case, it is said then that the ground has been slightly manured, and each square perch receives about 55 pounds. And lastly, if 12 loads are spread over each acre, which must never occur where cereal crops are to be grown, (we of course do not include Indian corn,) unless the land has been completely exhausted, then the ground is said to have received an abundant manuring.

It is customary to allow only one-half the weight and quantity of manure above mentioned, when the manure is derived entirely from sheep, because the effects which it produces are at once greater and more prompt, but less efficacious in point of durability.

The periods of these manurings occur every three, four, six or nine years. The more frequently applied, the slighter they are; and the longer the intervals, the more abundant must the manuring be. Thus, it is necessary to take into account not only the quantity to be laid on at each time, but the number of times to be repeated.

HOW BEEF IS PROVIDED IN CALIFORNIA.

EARLY this morning a bullock was brought up and slaughtered in front of the house. The process of slaughtering a beef is as follows: A *vaquero*, mounted on a trained horse, and provided with a lasso, proceeds to the place where the herd is grazing. Selecting an animal, he soon secures it by throwing the noose of the lasso over its horns, and fastening the other end around the pommel of the saddle. During the first struggles of the animal for liberty, which usually are very violent, the *vaquero* sits firmly in his seat, and keeps his horse in such a position that the fury and strength of the beast are exhausted without producing any other result than his own exhaustion. The animal, soon ascertaining that he cannot release himself from the rope, submits to be pulled along to the place of execution. Arriving here, the *vaquero* winds the lasso round the legs of the doomed beast, and throws him to the ground, where he lies perfectly helpless and motionless. Dismounting from his horse, he then takes from his legging the butcher-knife that he always carries with him, and sticks the animal in the throat. He soon bleeds to death, when, in an incredibly short space of time for such a performance, the carcass is flayed and quartered, and the meat is either roasting before the fire or simmering in the stew-pan. The lassoing and slaughter of a bullock is one of the most exciting scenes of the Californians; and the daring horsemanship and dexterous use of the lariat usually displayed on these occasions are worthy of admiration. I could not but notice the Golgotha-like aspect of the grounds surrounding the house. The bones of cattle were thickly strewn in all directions, showing a terrible slaughter of the four-footed tribe, and a prodigious consumption of flesh.—*What I saw in California.*

ONE-HORSE CARTS.

BY EDWARD BOWLY, SIDDINGTON, NEAR CIRENCESTER.

PRIZE ESSAY.....From the Journal of the Royal Agricultural Society of England.

HAVING had five years' practical experience in the use of wagons, and nearly the same time of one-horse carts, on a farm of 170 acres of arable and 80 acres of pasture land, I have arrived at a satisfactory conclusion as to the comparative advantages of the latter. I will, as briefly as possible, point out what I consider to be those advantages.

We must first consider the saving of capital in entering a farm by employing one-horse carts instead of wagons. From the great variety of soil it is difficult to form a just estimate of the amount of horse-power required to cultivate a given quantity of land. We may, however, to a certain extent do so by taking for our purpose land of medium quality, of which description my own farm consists. I have no light plowing land, nor have I more than 20 or 30 acres of very heavy land. I will, therefore, relate my actual experience. In the employment of wagons and the old broad-wheeled dung-carts, I required one wagon, one cart, and three horses to every 50 acres of arable land. I also kept a light cart for general purposes. Now that I am employing carts, I find that I get through my work much more easily with two horses and two carts to 50 acres. The following is a fair calculation of the first outlay under the two systems:—

1 wagon.....	£25 0 0
1 dung-cart.....	15 0 0
3 horses.....	60 0 0
Extra harness.....	2 0 0
Proportionate cost of the light cart to 50 acres. 3 0 0	
Total.....	105 0 0
Two 4-inch wheel one-horse carts.....	£25 0 0
Two horses.....	40 0 0
	64 0 0
Balance in favor of carts.....	41 0 0
Total.....	105 0 0

This shows a saving of upwards of 16s. an acre, which many young farmers would find extremely useful to expend in stock or implements. There is also some annual saving in the expense of the repairs under the cart system, as well as that of the keep of one horse to every 50 acres. I believe there are those who think this of little importance; that they can keep horses at a very small expense, say from 3s. to 5s. per week; and that if fewer are kept, they must be fed more highly, and therefore the cost is much the same, forgetting that the more horses are kept the greater number of hands are required to attend them, whose time also is wasted if the animals are not in a state to do a good day's work; nor is the manure nearly so valuable as when the horses are kept in a better

state. To estimate the saving of keeping one horse less to 50 acres, I will make my calculations from my own method of keep. I have not for years allowed my horses any hay. In winter I give them 10 lbs. of corn, [meaning oats or barley] 10 lbs. of carrots or swedes, and as much straw-chaff as they will eat, per diem. The corn I value at 6s. per week, the roots at 9d., and the straw with expense of cutting into chaff 1s. 3d., making in the whole 8s. per week, which, with 1s. for shoeing, &c., amounts to 9s. [or £2 25.] In the summer I give them green clover or vetches, without corn, which I value at 5s. per week, making 6s. with 1s. added for shoeing, &c.; the average therefore for the whole year will be 7s. 6d. each horse. It therefore follows that if we can save one horse in the cultivation of 50 acres, it will amount to nearly 8s. per acre.

I will now proceed to the working of the system. It is, I believe, generally admitted that one horse attached to a given weight, will move it more easily than two horses attached to double that weight. This arises not only from the advantage gained by having all the power of draught close to the work, but also all the power applied at the same moment, which is almost impossible where two or more horses, having different wills and steps, are attached to the weight; and for the same reason one horse will travel more quickly singly. I have often heard it remarked as teams have passed "how well the horses pull together," when, perhaps, they have been moving at something less than two miles an hour; but hasten them to four miles an hour, and this steady working team will draw very uneasily, one horse pulling to the right hand, another to the left; therefore a great saving of time is occasioned in the quickness of motion with one horse carts. When a cart is filled there is no delay in attaching the trace-horses, during which operation the one horse would be two hundred yards on the road. I know this might be done more quickly by having men ready to change the horses, as is the practice of opposition coaches, but I am speaking of the matter-of-fact working of the system. Then again, when the load is deposited, the one horse turns in much less time than the two or three. These facts are too self-evident to admit of contradiction; indeed, I believe the economy of carting manure with one-horse carts is generally allowed, but the employment of them in harvesting is much objected to. In this respect, however, I find them equally expeditious and economical. My actual experience is that three carts, with the harvest frames attached, will convey as much hay or corn in the straw as two wagons, and that they are bound with the ropes in the same time, therefore no time is lost in

binding. They are easier to pitch to than wagons, and not more difficult to unload; and all the advantages are gained of speed in traveling.

The facility with which carts are set to a rick, as compared with wagons, will effect a much greater saving of time than in working from a heap of manure; you can also draw the carts to all sides of the rick, thereby avoiding the inconvenience of drawing your rick aside by the great treading there generally is on the side on which you unload the wagons, the usual practice being to unload all on one side, from the wagon being too unwieldy in turning to be set at the other sides. My system in carrying a field, what we call "double handed"—that is, with two pitchers and two loaders—is to commence with one cart, having one pitcher and loader, and when that is half loaded to start another with the other pitcher and loader.—When the first is filled it goes to the rick, and is followed by the others in succession: by commencing in this way we keep on regularly through the day, having two carts loading in the field and two unloading at the rick, and the number of carts employed in going to and from must be regulated by the distance of the field from the rick; if very near, one will be sufficient, and more than two are seldom required on any farm of moderate dimensions. I conceive it would not be generally useful to mention the time occupied in securing a given number of acres of corn with carts, as so much depends on the bulk of the crop, as well as the power of the men employed. I once accurately remarked the time of such an operation: it was in carrying a very heavy crop of 10 acres of *mown* wheat close to the homestead, which took with five carts four hours and a quarter from the first cart entering the field to the finishing off the rick with the last. The longer the distance of the field from the rick the greater will be the advantage of carts. Supposing each wagon to be drawn by two horses (three are frequently employed,) and that three carts will convey as much as two wagons, which I am certain will be more than borne out in practice; then three horses will take as much in the carts as four in the wagons, and they will perform the distance in little more than half the time. It is supposed that an additional expense attends carts in the number of boys required to go with them: this is not the case; the boys are younger and less expensive than those intrusted with wagons, and the horses do not need any boy in the field, as when they become accustomed to their work they will walk steadily beside the cocks without being attended. There is an impression that carts will not answer in hilly situations; we find, however, they are employed, to the exclusion of wagons, in some of the most hilly counties of England. I have certainly nothing very steep on my farm; but 50 acres lie nearly two miles from the rest of my land, on which road there are two very sharp pitches, up and down which I am constantly taking loads, and have never found more inconvenience with carts than I formerly did with wagons. But, to prevent any possibility of accident, there is now to be had the self-acting drag, which retards the wheels in proportion to the descent; there is also a very simple method of moving the load forward by means of a screw when going up hill, and backward in descending a hill. But I have found the carts I have answer so well without these additions, that I shall not go to the expense of either of these improvements at

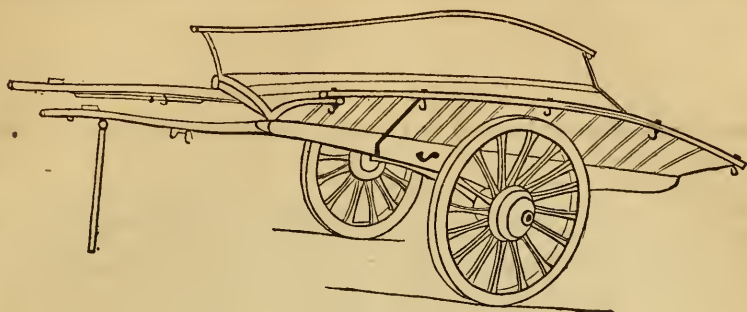
present. In taking out corn in the sacks, carts will be found far preferable to wagons, as in all the other operations carrying a greater weight with the same ease and in less time, each cart carrying 5 quarters of wheat. Nearly the whole of my wheat goes to a mill seven miles distant, on the road to which there are three steep hills. I always send two carts, carrying five quarters of wheat each, with one lad of eighteen or twenty, going twice a-day; and in summer, when the roads are very good, I have put $5\frac{1}{2}$ quarters behind each horse: thus two horses would deliver 22 quarters in a day.

I have endeavored to answer all the objections I have heard used against one-horse carts, objections which I once strongly felt myself.—My attention was first drawn seriously to the subject from hiring a man to draw some stones for draining. He came with a horse only 14 hands high and a small cart, when the work he accomplished so surprised me, that I at once decided to try two light carts, which, after succeeding well in all other operations, I employed in the harvest field; and being fully satisfied with them in this capacity, I soon discarded every wagon from the farm.

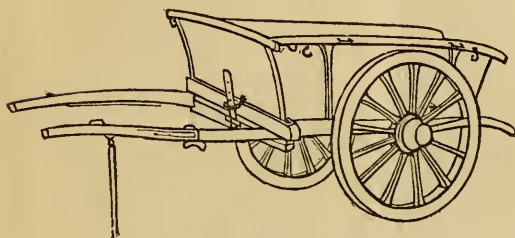
I have carefully endeavored to give a just estimate of the saving in horses and implements by the use of carts; since they were first employed by me I have effected a greater reduction in the number of each than is here represented. When I kept wagons I had not so much land by 20 acres in cultivation as at present; I then kept ten horses, four wagons, three dung carts, and one light cart; I now only keep six carts and six horses. I, however, attribute a portion of the saving to the use of the scarifier in many instances instead of the plow, and I now very rarely put more than two horses to a plow, while at that time I frequently had three; on the other hand, for two years past, I have each year carted 150 loads of night-soil a distance of a mile and a half, and 300 loads of road-scrappings, &c. half a mile, which is two-thirds more than I did during the time I had wagons. I have also done each year the following extra work:—carted 30 tons of potatoes two miles, 60 tons of roots half a mile, subsoil plowed 6 or 7 acres, and carted stones for 15 acres of draining 30 feet distant. I have therefore taken all these things into due consideration, and given the fairest representation in my power.

The description of carts I make use of are, five common Scotch carts and one skeleton cart; those of the former, with narrow wheels, cost me 10 guineas each; and with the 4-inch wheels (which I recommend) £12, with harvest-frame, &c. complete. The skeleton with narrow wheels cost me £10; it will carry more hay or straw than the others, its loads being in proportion of four carts to three wagons—it is more convenient for conveying poles, hurdles, &c.; and one on a farm may be useful, but it will not answer in dung-carting, and its advantages in harvesting are not sufficient to remunerate for the additional outlay of a double set.

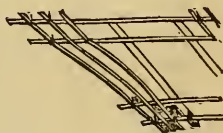
In conclusion, I may remark that the principle of one-horse carts is quickness of motion, therefore load according to the road to be passed over, but never reduce the pace of traveling; and I can assure those who are timid about them, that they are much less liable to accidents of every kind than wagons; and that, however prejudiced the workman may be against their first introduction, when he becomes acquainted with the system he will prefer it.



Skeleton Cart.



Scotch Cart.



Harvest Frame.

ADULTERATED FLOUR DETECTOR.

M. BOLAND, a baker, of Paris, has invented an ingenious instrument, called by him the aleurometer, the purpose of which is to indicate the panifiable properties of wheat flour. The indication depends upon the expansion of the gluten contained in a given quantity of flour, say 500 grains, when freed by elutriation from its starch. A ball of gluten being placed in a cylinder to which a piston is fitted, the apparatus is exposed to a temperature of 150 degrees: as the gluten dilates, its degree of dilatation is marked by the piston-rod. If 25 degrees of dilatation are not obtained, the flour is rejected, the best flour usually giving from 38 to 50 degrees. From experiments which have been made by Chevreul and Payen, it appears that the dilatation shows correctly the degree of deterioration which the wheat flour has undergone; and consequently the aleurometer offers itself as an instrument of practical importance. The same principle may be applied to various other purposes: indeed, Silberman has constructed a new alcoholometer, of a character similar to the aleurometer. There is also an instrument in use in Paris for showing the genuineness of milk, and the degree of richness of cream, invented by Dr. Donn  , and called the lactometer. The practical use suggested by a contemporary, of such instruments, was well illustrated in Brussels on the 27th of June, 1844. That morning a body of police, armed with lactometers, were posted at the various gates or "barriers." They tested all the milk that was brought into the city for that day's consumption, and the consequence was that eighty large cans of it were condemned.—*English Paper*.

TABLE....BY JOHN MORTON.

Showing the distance traveled by a horse, in plowing or scarifying an acre of land ; also, the quantity of land worked in a day, at the rate of sixteen and eighteen miles per day of nine hours.

Breadth of furrow-slice, or scarifier.	Space traveled in plowing an acre.	Extent plowed per day, at the rate of		Breadth of furrow-slice, or scarifier.	Space traveled in plowing an acre.	Extent plowed per day at the rate of	
		18 Miles	16 Miles.			18 Miles.	16 Miles.
Inches.	Miles.	Acres.		Inches.	Miles.	Acres.	
7	$14\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{8}$	46	$2\frac{1}{6}$	$8\frac{1}{3}$	$7\frac{2}{5}$
8	$12\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{4}$	47	$2\frac{1}{10}$	8	$7\frac{3}{5}$
9	11	$1\frac{3}{5}$	$1\frac{1}{2}$	48	$2\frac{1}{12}$	$8\frac{3}{4}$	$7\frac{3}{4}$
10	$9\frac{9}{10}$	$1\frac{4}{5}$	$1\frac{3}{5}$	49	2	$8\frac{9}{10}$	$7\frac{9}{10}$
11	9	2	$1\frac{3}{4}$	50	2	$9\frac{9}{10}$	$8\frac{1}{10}$
12	$8\frac{1}{4}$	$2\frac{1}{5}$	$1\frac{9}{10}$	51	$1\frac{9}{10}$	$9\frac{1}{5}$	$8\frac{1}{4}$
13	$7\frac{1}{2}$	$2\frac{1}{3}$	$2\frac{1}{10}$	52	$1\frac{9}{10}$	$9\frac{1}{5}$	$8\frac{3}{5}$
14	7	$2\frac{1}{2}$	$2\frac{1}{4}$	53	$1\frac{9}{10}$	$9\frac{3}{5}$	$8\frac{1}{2}$
15	$6\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{3}{5}$	54	$1\frac{4}{5}$	$9\frac{4}{5}$	$8\frac{9}{10}$
16	$6\frac{1}{6}$	$2\frac{9}{10}$	$2\frac{3}{5}$	55	$1\frac{4}{5}$	10	8
17	$5\frac{3}{4}$	$3\frac{1}{10}$	$2\frac{4}{5}$	56	$1\frac{3}{4}$	$10\frac{1}{4}$	9
18	$5\frac{1}{2}$	$3\frac{1}{4}$	$2\frac{9}{10}$	57	$1\frac{3}{4}$	$10\frac{2}{5}$	$9\frac{1}{5}$
19	$5\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{1}{10}$	58	$1\frac{7}{10}$	$10\frac{3}{5}$	$9\frac{1}{3}$
20	$4\frac{9}{10}$	$3\frac{3}{5}$	$3\frac{1}{4}$	59	$1\frac{7}{10}$	$10\frac{3}{4}$	$9\frac{1}{2}$
21	$4\frac{7}{10}$	$3\frac{4}{5}$	$3\frac{3}{5}$	60	$1\frac{5}{5}$	$10\frac{9}{10}$	$9\frac{7}{10}$
22	$4\frac{2}{4}$	4	$3\frac{1}{2}$	61	$1\frac{3}{5}$	$11\frac{1}{5}$	$9\frac{4}{5}$
23	$4\frac{1}{4}$	$4\frac{1}{5}$	$3\frac{7}{10}$	62	$1\frac{3}{5}$	$11\frac{1}{3}$	10
24	4	$4\frac{1}{3}$	$3\frac{9}{10}$	63	$1\frac{3}{5}$	$11\frac{1}{2}$	$10\frac{1}{5}$
25	4	$4\frac{1}{3}$	4	64	$1\frac{1}{2}$	$11\frac{7}{10}$	$10\frac{1}{3}$
26	$3\frac{4}{5}$	$4\frac{3}{4}$	$4\frac{1}{5}$	65	$1\frac{1}{2}$	$11\frac{3}{5}$	$10\frac{2}{5}$
27	$3\frac{3}{5}$	$4\frac{9}{10}$	$4\frac{1}{3}$	66	$1\frac{1}{2}$	12	$10\frac{3}{5}$
28	$3\frac{1}{2}$	$5\frac{1}{8}$	$4\frac{1}{2}$	67	$1\frac{1}{2}$	$12\frac{1}{4}$	$10\frac{4}{5}$
29	$3\frac{1}{2}$	$5\frac{1}{4}$	$4\frac{3}{5}$	68	$1\frac{1}{2}$	$12\frac{2}{5}$	11
30	$3\frac{1}{3}$	$5\frac{3}{4}$	$4\frac{4}{5}$	69	$1\frac{5}{5}$	$12\frac{3}{5}$	$11\frac{1}{6}$
31	$3\frac{1}{5}$	5	5	70	$1\frac{5}{5}$	$12\frac{3}{4}$	$11\frac{1}{3}$
32	$3\frac{1}{10}$	$5\frac{4}{5}$	$5\frac{1}{4}$	71	$1\frac{5}{5}$	$12\frac{3}{10}$	$11\frac{1}{2}$
33	3	6	$5\frac{1}{3}$	72	$1\frac{5}{5}$	$13\frac{1}{5}$	$11\frac{3}{5}$
34	$2\frac{9}{10}$	$6\frac{1}{5}$	$5\frac{5}{5}$	73	$1\frac{1}{3}$	$13\frac{1}{3}$	$11\frac{4}{5}$
35	$2\frac{4}{10}$	$6\frac{1}{3}$	$5\frac{5}{5}$	74	$1\frac{1}{3}$	$13\frac{1}{2}$	12
36	$2\frac{3}{4}$	$6\frac{1}{2}$	$5\frac{4}{5}$	75	$1\frac{1}{3}$	$13\frac{3}{5}$	$12\frac{1}{8}$
37	$2\frac{2}{3}$	$6\frac{1}{4}$	6	76	$1\frac{3}{10}$	$13\frac{4}{5}$	$12\frac{1}{4}$
38	$2\frac{3}{5}$	$6\frac{9}{10}$	$6\frac{1}{8}$	77	$1\frac{3}{10}$	14	$12\frac{1}{2}$
39	$2\frac{1}{2}$	$7\frac{1}{8}$	$6\frac{1}{3}$	78	$1\frac{4}{4}$	$14\frac{1}{4}$	$12\frac{3}{5}$
40	$2\frac{1}{5}$	$7\frac{3}{5}$	$6\frac{1}{3}$	79	$1\frac{4}{4}$	$14\frac{2}{5}$	$12\frac{3}{4}$
41	$2\frac{2}{5}$	$7\frac{3}{4}$	$6\frac{1}{4}$	80	$1\frac{4}{4}$	$14\frac{3}{5}$	$12\frac{9}{10}$
42	$2\frac{1}{3}$	7	$6\frac{2}{3}$	81	$1\frac{5}{5}$	$14\frac{3}{4}$	$13\frac{1}{10}$
43	$2\frac{3}{10}$	$7\frac{4}{5}$	7	82	$1\frac{5}{5}$	15	$13\frac{1}{4}$
44	2	8	$7\frac{1}{10}$	83	$1\frac{5}{5}$	$15\frac{1}{8}$	$13\frac{2}{5}$
45	$2\frac{1}{5}$	$8\frac{1}{6}$	$7\frac{1}{4}$	84	$1\frac{6}{6}$	$15\frac{3}{3}$	$13\frac{3}{5}$

THE HORNED PHEASANTS OF THE HIGH MOUNTAINS OF INDIA.



[The Horned Pheasant.]

THE Pheasants (*Phasianidæ*) form one of the most interesting groups of the feathered race, whatever be the point of view in which we contemplate them. Their beauty of form and the splendor of their hues have attracted universal admiration. Many dazzle by the metallic lustre of their plumage, which gleams with green, and blue, and gold. Such, for example, is the case with that gorgeous bird, the Impeyan Pheasant (*Lophophorus Impeyanus*) of the Himalayan Mountains, which it has several times been attempted to bring alive into this country, but hitherto without success. Others, as the Golden Pheasant of China (*Phasianus Pictus*), delight us with the richness and multiplicity of their

tints, which contrast admirably with each other. The Common Pheasant, now naturalized over the greater portion of Europe, is exceedingly beautiful, but it is far surpassed by many of its congeners, of which we may mention that elegant Chinese species, the *Phasianus Reevesii* (*P. venesatus*, Temm.), of which a fine specimen adorns the Gardens of the Zoological Society. It is to be observed, however, that this beauty of plumage is confined to the males; the females are universally attired in a sober dress of brown—often, indeed, exquisitely pencilled with spots and zigzag lines, but totally destitute of the brilliant hues which glisten in their mates. Independently, however, of the beauty of the

Pheasant tribe, there is another point of interest which cannot be overlooked—we allude to their value as it respects the table. The flesh of all the gallinaceous birds affords to man a wholesome and nutritious food, and that of the Pheasants is, deservedly, in high estimation. Hence the introduction and naturalization of the Common Pheasant in Western Europe is a positive good; and it is desirable, therefore, to add other species to the list of those which are acclimated with us.

The Pheasants (family *Phasianidae*) are all natives of Asia. The Common Pheasant was originally brought from the river Phasis, by the Greeks, in some of their earlier expeditions; that of the Argonauts, under Jason, has the popular credit of having introduced it. However this may be, the name given to the bird by the Greeks, (*φασίανος*,—in Latin, *Phasianus*)—of which all our modern European names for it are merely corruptions, points to the banks of the Phasis as the place from which it was derived; and, to the present day, the Pheasants of Mingrelia (the Colchis of the ancients) are celebrated for their beauty and size. Extreme brilliancy of plumage is, in general, the characteristic of birds dwelling in torrid regions beneath a glowing sky; such is not the case as it regards the most gorgeous and beautiful of the Pheasant tribe. On the contrary, the high mountains of the Himalaya, bordering upon the limits of perpetual snow, are tenanted by the most splendid of this family. The Impeyan Pheasant is an example in point: adapted for regions where the temperature is, at the most, only moderate, and often at a low degree, this noble bird soon dies when taken from its Alpine home into the burning lowlands of India; and hence arises one of the difficulties in the way of our obtaining living specimens in Europe. But, besides the Impeyan Pheasant, the Himalaya chain of mountains presents us with a group or genus of this family, containing a very limited number of species remarkable both for their great beauty and their characters, which indicate an affinity to the turkeys—between which group and that of the genuine Pheasants they constitute an intermediate link. The genus to which we allude is that termed *Tragopan* (Cuvier), of which three species only are known. They are easily distinguishable from all the rest of the *Phasianidae* (at least as far as regards the male birds), by the presence of large throat-wattles, or naked carunculated flaps of skin (resembling those of the turkey), which extend from the naked cheeks, spread over the throat, and proceed down each side of the neck; while from behind each eye rises a soft fleshy horn. The whole of these appendages are capable of being contracted and dilated at pleasure, or at least in accordance with the emotions of anger, fear, &c., as we see in the male turkey: the tints of the horns and wattles are rich purple, mingled with scarlet, and are most probably changeable from one hue to another. The tail is broad and rounded, and the plumage is dotted with round spots of white on a brown or red ground, the effect of which is very pleasing.

Of the three species that are known at present, two have been but recently introduced to Science—nor, indeed, is our acquaintance with the one first described of distant date. The first species is the Horned Pheasant of Nepal (*Tragopan satyrus*). It was first described and figured by Edwards, in the third volume of his “Natural History of Birds,” p. 116—partly from

a drawing sent from India to Dr. Mead, and partly from a head of the bird preserved in spirits, which accompanied the drawing. Edwards's third volume is dated 1750, and his plate was etched in 1749, as appears by the date inscribed in the corner. The alliance of this bird to the turkey was not unobserved by this writer, who in his catalogue places it among that group, while in his account of it he observes that it is, “for shape of body and proportion of parts, pretty much like a turkey, and may be ranged with fowls of the poultry kind.” Dr. Latham, in his “General History of Birds,” states that these birds, though by no means common, “are not unfrequently in drawings done in India; and are particularly well figured in those of Mr. Middleton and Lady Impey.” . . . “In the drawings of Sir J. Anstruther it is said to inhabit the snowy regions of Thibet.” Its size is between that of a fowl and turkey. It is beautifully figured in Gould's “Century of Birds.”

The second species is from Thibet and the Chinese borders, and was first described and figured in the “Indian Zoology,” by Mr. Gray, under the title of *Tragopan Temminckii*. Of this species, as rare as it is beautiful, a living specimen, presented by J. R. Reeves, Esq., is now in the Gardens of the Zoological Society, and constitutes, as far as we are aware, the first example of one of the present group having reached our shores alive and in health. It was procured in China.

The third species is from the northern range of the Himalaya, and was first illustrated in Mr. Gould's “Century,” under the name of *Tragopan Hastingsii*; the figures are those of an adult and young male, and adult female. In size this species rather exceeds the *Tragopan Satyrus*—its total length being 23 inches.

Could the Horned Pheasants, or the refulgent Impeyan Pheasant, be imported in sufficient numbers into our island (and we trust this will be soon accomplished), there is little doubt but that they might, with proper management, become naturalized. There is nothing to fear with regard to cold. They are the natives of a cold or temperate region—they verge upon the line of perpetual snow—so that the wooded hills of our portion of the globe would not be very uncongenial to their constitution. Nor would there be much difficulty in providing them with suitable food. Grain forms the staple diet of all the gallinaceous tribe; hence the Peacock of India, the Guinea-Fowl of Africa, the Common Pheasant of Asia, the Turkey of America, have equally become naturalized and have multiplied in our western regions; to say nothing of the Common Fowl, the origin of which (the Jungle Fowl) is from India, but which, from time immemorial, has been reclaimed or domesticated, and has long since spread in this condition over the greatest portion of the globe. Thus the food of the gallinaceous tribe, and the bardness of their constitution, fit most of them, at least, for a very extensive diffusion throughout the globe; and in this we may discern a wise arrangement of Nature, inasmuch as, of all the feathered race, they are the most valuable to man, and are at once ornaments around his dwelling and wholesome delicacies on his table. If to our poultry-yard could be added the Horned Pheasants, so closely allied to them in form, habits, and general manners, they would constitute a most important acquisition, and produce a full reward for the trouble bestowed in their naturalization.

[London Penny Magazine.

READINGS FOR MOTHERS AND CHILDREN.

AN early occasion was taken to announce the determination to devote some ten or a dozen pages monthly to matter suited to the heading, "READINGS FOR MOTHERS AND CHILDREN;" for every farmer, properly impressed with a sense of his duties to his family, will regard a provision of suitable reading for them, as the very next most indispensable provision, after a supply of wholesome bodily food. *But*, says the mother and the dear children, have you complied with your promise? Alas, we are ashamed to confess that we have not, to the extent that the mother had a right to expect, and while we are on the stool of confession and repentance, we will go further and say, though not in the way of extenuation, that in *this respect*, we have but followed the bad example of too many farmers, who, in their domestic management, seem to think, that of all people on the place, the *good housewife* is the one who will bear most patiently, and with whom, therefore, the greatest liberties may be taken. Hence you will see that on every emergency her province is invaded by the hand of power—her property is seized upon, her forces taken and put to other work,—her garden abandoned to ill weeds that "grow apace"—her dairy utensils polluted to unclean uses—her bridle *borrowed*, her horse put in the plough, her house-gang sent into the field, her poultry stinted in their allowance, and sometimes her very pillows stript of their cases to be sent, now to the mill, with a little choice grain, and next to the store for sugar! But where should we stop, were we to enumerate all the liberties that are taken with the good, easy housewife? Were we to recount all that we have noted, though it may be without giving speech to what we have thought about the *WRONGS OF THE HOUSEWIFE*, truly we could *write a book* on the subject, nor are we sure but that some of these days we will, if—we could hope they would ever be allowed to see it. But, all jesting apart—and "there are many true words spoken in jest,"—of all the relations and duties of the housewife, that in which she has ever appeared to us in a light most admirable—we had almost said *holy*—is when she unites the office of *mother and instructor* to her children. Alas, they are themselves too often not well enough instructed to appreciate or fulfil the obligations of a trust so sacred. Say what we will about schools and systems of education, it is the mother after all who "teaches the young idea how to shoot," and every farmer knows that "as the twig is bent, the tree 's inclined."

The great study in the management of the young mind of the child, should be as with the young body of the colt or the calf, to provide it with *suitable, nourishing, and improving food*—not to gorge and surfeit either, but to promote a constant normal condition and progress, at the true period of growth. When children have passed into the world, and been consigned to the exclusive care of the teacher, or employer, or boss, as they call it in the towns, beyond the ever-watchful eye of the mother, generally their character has already taken its *set* for good or for evil, and hence the vast importance of attention to the mind and morals of daughters who are to be mothers. It is but partially, and to a very limited extent, we can aid in the important work; but that little, with the leave and aid of our husband and parent readers, we will endeavour to accomplish. If what we have given in this department, in the last year, has not been so extensive, we have yet desired to make it unexceptionable and somewhat attractive. The heading is not continued in each consecutive number, because that would disfigure the little *book* which finally we propose to make of these *READINGS FOR MOTHERS AND CHILDREN*, in which we can at least promise that nothing shall ever appear which the most sensitive and cautious mother shall deem necessary to keep from the eyes of her beloved offspring.

We have deemed so much not out of the way, in the commencement of a new volume, and as introductory to one of the best essays which has fallen lately under our notice, on the subject of education, and which reached us lately in a public journal—one of the most dignified, wise, and conservative of all that is good and praiseworthy, that ever yet lived to instruct and benefit the age of its existence, and to guide him who, in an age to come, shall write impartially the history of these times.

The following was marked No. 2. We could wish we had them all.

PARENTAL EDUCATION.

[For the National Intelligencer.]

It is much easier to find faults than to correct them; but one thing is certain, if faults are not seen, or pointed out, they will not be corrected. However unpleasant it may be to see our faults, he nevertheless would be considered our best friend who kindly places the truth before our eyes. It is well if we have friends who can point out faults to which we may be blind. Perhaps no relation in life affords more striking instances

of blindness to one's own faults than that of the parent. Thousands of parents have good theories on family government, and can readily see their neighbours fail; yet, though grossly at fault themselves, they never mistrust but that they are perfect paragons in the art. These mistaken views are easily accounted for upon well known principles. There is an old homely proverb, "Every owl thinks its own young ones prettiest," quite to the point.

This feeling arises from a necessary principle of our nature, and is not to be condemned; for, when it is under the control of a sound and well-directed judgment, it tends to the most perfect parental discipline. Under its influence the parent will make almost any sacrifice which he imagines will be best for his offspring. If it is guided by true wisdom, the parent will sometimes be willing to deny a present gratification to a child for the sake of a future and more solid good. Very many look no further than the present. If they bestow a special favour upon a child, it is to secure a present object; the *tendency* and *results* of such favours are not considered. If they inflict chastisement, it is in a fit of anger, or while they are smarting under the aggravation of the offence; so that a child, feeling the punishment to be retaliatory, will muster all the energies of a bravo to defeat the end of punishment. Here is a prominent difficulty. A fault like this is most prolific of evil results. Those parents guilty of it are not unlike the ignorant and indolent gardener, who may think that the native goodness of the useful plant is so great as to outgrow the noisome weed. Through fear of hurting the plant, or lack of physical energy, he allows the weeds to grow to the injury or ruin of the plant. Or it may be that in a fit of as-

tonishment at the rapid growth of the useless weeds, he dashes among them with a ruthless hand, makes devastation among both weeds and plants, and leaves great numbers unextirpated, and embedded, or slightly concealed, under his work of destruction, which will again spring up to his mortification.

The true end of parental discipline cannot be gained without impartial observation and *unhesitating decision in checking the first manifestation of wilful disobedience*. This disposition will exhibit itself in every child which has common sense and spirit enough to do any hurt or good in the world. No doubt it will appear earlier in some children than in others, but when it does appear *it must be checked; and it must be checked and subdued as often as it appears*. Too many parents seem not to know nor feel the importance of *strict attention to this particular*. Often when they see wilful and determined resistance to their wishes, their misguided affection influences them to pass it over with the common excuse that the *child is too young to be punished*. As this is the most critical period of the child's life, the parent needs much wisdom and discretion to know when and how to exercise authority. The seeds of disobedience are sown broad-cast in human nature; and they will germinate and grow; but just as soon *as they can be readily discovered*, as soon as the will of the child becomes opposed to the parent, then *true affection and regard for the child* require a course of *thorough and unrelaxed discipline*. If this is neglected too long, the child will get beyond control—his will gains strength, becomes unyielding, and though apparently subdued, yet, by its own native elasticity, it resumes its former position when restraint is removed.

PENMANSHIP.

Few parents, as we apprehend, highly enough estimate, and often enough think of the importance of an early acquirement of a good hand-writing—*chirography*, as it is more learnedly called. This is one of the things to be attended to in the *very beginning* of learning to write. A boy should not be allowed to write even the shortest exercise in a slovenly or careless manner. We *men* are too apt to regard this as an affair of trivial importance, susceptible of rectification at any time. Than this, there can be no greater, or for the little boy or girl, more mischievous delusion. There is no habit which requires more care in its formation, or

which, when formed, becomes more fixed and unalterable than the formation of the hand-writing. We remember once asking an old friend, among the purest and best men it has been our fortune to know—George McKubin, of Annapolis, Maryland—to account for what struck us as a remarkable coincidence—the neat, fair, perfectly legible hand-writing of himself and his school contemporaries and class-mates, with whom we were then in daily association in the office of the late very able and very benevolent Chancellor Johnson, of Maryland, then Attorney-general, and afterwards Chancellor of the State, as one of his exemplary sons is

now Chancellor of the same State, and the other Attorney-general of the United States. Well, the ready answer of Mr. McKubin was, that old Father McDowell, for years the honoured President of St. John's College, would never receive from any young gentleman under his instruction, any exercise or other writing that was not presented on clean, nice paper, neatly, and as well written as the boy *could* write. If defective in any of these particulars, no matter how well executed otherwise, it was at once rejected as unworthy. This kept them on the *qui vive*, and so all grew up in the possession of a penmanship, with which alone, if need be, any one of them, of otherwise good habits, might make a living. It must, however, be admitted, since he has been unexpectedly referred to in this connection, that the present Attorney-general could never have risen to his present elevated position by any such accomplishment. It must have been, we conclude, by force of head rather than of hand-writing. We presume the venerable McDowell had either

left the College or was tempted to excuse the unseemliness of the chirography, in consideration of the high promise of the youth in other even yet more important accomplishments.

Lately, by chance, our eye fell upon the manuscript exercise of a youth of some 12 or 13—P. Howard Brice—grandson of the venerable Judge Brice, of Baltimore, (we like to give the name of deserving boys,) so excellent for its fairness, legibility, and ease, that we could not forbear telling him that in that alone he had already secured the means of a comfortable subsistence.

If ourselves young, and had but \$1000, as we have not as many dimes, we would give them to possess such a penmanship. Can we say more to impress on mothers our own idea of the importance of attending to the first essays of their children in writing?—for let us repeat, it is in the first lessons of a year or two that the habit is contracted for good or bad.

FISHING.

A FRIEND with whom I have enjoyed many an agreeable day's fishing, and whose excellence of heart and mind, as well as his attainments in the science of the angle, would have procured him the friendship of Izaak Walton, had he lived in his time, (which, luckily for myself and his other friends, he did not,) has allowed me to insert the following shrewd remarks on fly-fishing, written by him in the album of a celebrated fishing club; not, he says, as sure guides, but loosely thrown out to provoke contradictions from the expert, and to elicit truth.

MAXIMS AND HINTS FOR AN ANGLER.

BY A BUNGLER.

1. Are there any fish in the river to which you are going? Having settled the above question in the affirmative, get some person who knows the water to show you whereabouts the fish usually lie; and when he shows them to you, do not show yourself to them.

2. Do not imagine that, because a fish does not instantly dart off on first seeing you, he is the less aware of your presence: he almost always on such occasions ceases to feed, and pays you the compliment of devoting his whole attention to you, while he is preparing for a start whenever the apprehended danger becomes sufficiently imminent.

3. When you are fishing with the natural

May-fly, it is as well to wait for a passing cloud, as to drive away the fish by putting your fly to him in the glare of the sunshine, when he will not take it.

4. If you pass your fly neatly and well three times over a trout, and he refuses it, do not wait any longer for him: you may be sure that he has seen the line of invitation which you have sent over the water to him, and does not intend to come.

5. If you are above a fish in the stream when you hook him, get below him as soon as you can; and remember that if you pull him but for an instant against the stream, he will, if a heavy fish, break his hold; or if he should be firmly hooked, you will probably find that the united strength of the stream and fish is too much for your skill and tackle.

6. I do not think that a fish has much power of stopping himself if, immediately on being hooked, he is moved slowly with the current, under the attractive influence of your rod and line: he may then be at once brought, by a well-regulated exercise of gentle violence, to the bank, from whence he is to be instantly whipt out by an expert assistant.

7. If, after hooking a trout, you allow him to remain stationary but for a moment, he will have time to put his helm hard a-port or a-starboard, and to offer some resistance.

8. Bear always in mind that no tackle is strong enough, unless well handled. A

good fisherman will easily kill a trout of three pounds with a rod and line which are not strong enough to lift a dead weight of one pound from the floor, and place it on the table.

9. Remember that, in whipping with the artificial fly, it must have time, when you have drawn it out of the water, to make the whole circuit, and to be at one time straight *behind* you, before it can be driven out straight *before* you. If you give it the forward impulse too soon, you will hear a crack. Take this as a hint that your fly is gone to grass.

10. Never throw with a long line when a short one will answer your purpose. The most difficult fish to hook is one which is rising at three-fourths of the utmost distance to which you can throw. Even when you are at the extent of your distance, you have a better chance; because, in this case, when you do reach him, your line will be straight, and, when you do not, the intermediate failures will not alarm him.

11. There are only two cases in which a fish taking an artificial fly will infallibly hook himself without your assistance, viz.: when your fly first touches the water at the end of a straight line, or when you are drawing out your fly for a new throw.

12. If your line should fall loose and wavy into the water, it will either frighten away the fish, or he will take the fly into his mouth without fastening himself; and when he finds that it does not answer *his* purpose, he will spit it out again before it has answered *yours*.

13. When you are using two flies, you may sometimes catch a fish with one of them, and a weed growing in the river with the other; when such a *liaison* is once formed, you will find it difficult, with all your attractions, to overcome the strong attachment of the fish to your worthless rival. If the weed will not give way in this awkward juncture, you must proceed to extremities, and "then comes the tug of war;" and your line is quite as likely to break between you and the fish, as between the fish and the weed.

14. When, during the season of the May-fly, your friends, the gentlemen from London, say that they "have scarcely seen a fish rise all day," do not too hastily conclude that the fish have not been feasting on the fly. The only "rising" which is seen by the unlearned, is the splash which is made by a fish when he darts from a considerable depth in the water to catch a fly on the surface. There is, however, another sort of "rising" which is better worth the skilful angler's attention, viz.: when a fish is seriously feeding on the fly, he stations himself at no greater depth

than his own length; and making his tail the hinge of his motions, he gently raises his mouth to the top of the water, and quietly sucks in the fly attempting to pass over him. A rising of this sort is not easily seen, but it is worth looking for; because, although a fish feeding in this manner will rarely go many inches on either side for a fly, he will as rarely refuse to take one which comes (without the gut touching the water) directly to him.

15. If your fly (gut unfortunately included) should swim over a fish without his taking it, look out well for a darting line of undulation, which betokens his immediate departure; and remember that it is of no use to continue fishing for him after he has gone.

16. The stations chosen by fish for feeding, are those which are likely to afford them good sport in catching flies, viz.: 1. The mouths of ditches running into the river. 2. The confluence of two branches of a stream, which has been divided by a patch of weeds. 3. That part of a stream which has been narrowed by two such patches. 4. Fish are also to be found under the bank opposite to the wind, where they are waiting for the flies which are blown against that bank, and fall into the river.

17. When you see a large fish rising so greedily in the middle of a sharp stream, that you feel almost sure of his instantly taking your May-fly, I would advise you to make an accurate survey of all obstructions in the immediate neighbourhood of your feet, of any ditch which may be close behind you, or of any narrow plank, amidst high rushes, which you may shortly have to walk over in a hurry. If you should hook the fish, a knowledge of these interesting localities will be very useful to you.

18. When your water-proof boots are wet through, make a hole or two near the bottom of them, in order that the water, which runs in while you are walking in the river, may run freely out again while you are walking on the bank. You will thus avoid an accompaniment of pumping-music, which is not agreeable.

19. Never mind what they of the old school say about "playing him till he is tired." Much valuable time and many a good fish may be lost by this antiquated proceeding. Put him into your basket *as soon as you can*. Every thing depends on the manner in which you commence your acquaintance with him. If you can at first prevail upon him to walk a little way down the stream with you, you will have no difficulty afterwards in persuading him to let you have the pleasure of seeing him at dinner.

20. Do not leave off fishing early in the

evening because your friends are tired. After a bright day, the largest fish are to be caught by whipping between sunset and dark. Even, however, in these precious moments, you will not have good sport if you continue throwing after you have whipped your fly off. Pay attention to this: and if, after dusk, you have any doubt, you may easily ascertain the point, by drawing the end of the line quickly through your hand, particularly if you do not wear gloves.

21. When you have got hold of a good fish which is not very tractable, if you are married, gentle reader, think of your wife, who, like the fish, is united to you by very tender ties, which can only end with her death, or her going into weeds.

If a friend should invite you to his house, saying that he will give you "an excellent day's fishing," you ought not to doubt his kind intention, but do not feel very sure that you will have good sport. Provide yourself for such a visit with every thing which you may want, as if you were going into an uninhabited country. Above all things, take a landing-net with you. Your friend's (if he has one) is probably torn and without a handle, being a sort of reticulated shovel for taking fish out of the well of a punt.

The following is an "over-true" tale:—Piscator went last week to the house of his friend Mr. Jenkins, for a few days' fishing. He was received with the utmost kindness and hospitality, and on the following morning, after breakfast, the gardener (who was on that day called the fisherman) was desired to attend him to the river. Piscator, who had a landing-net of his own, begged to have a boy to carry it. Jack was immediately sent for, and he appeared in *top* boots, with a livery hat and waistcoat.

Arrived at the water side, Piscator gave his gnat-basket to the boy, and told him to go on the other side of the river, and look on the grass for a few May-flies. Jack said that he did not exactly know what May-flies were, and that the river could not be crossed without going over a bridge a mile off. Piscator, as suits his calling, is a patient man; so he began to fish with his landing-net for a few May-flies, and after he had necessarily frightened away many fish, he succeeded in catching six or seven flies.

Working one of them with the blowing line much to his own satisfaction, and anxious to extract a compliment from his attendant, he said, "They do not often fish here in this way, do they?" "No," said the boy, "they drags wi' a net; they did zo the day afore yesterday."

Our angler, after much patient fishing, hooked a fine trout; and having brought him carefully to the bank, he said, "Now, my lad, don't be in a hurry, but get him out as soon as you can." Jack ran to the water's edge, threw down the net, and seizing the line with both hands, of course broke it immediately.

Nothing daunted, the pertinacious angler mended his tackle and went on fishing; and when he thought, "good, easy man," that the very moment for hooking another trout was arrived, there was a great splash just above his fly; and the boy exclaiming, "Dang it, I missed 'un," instantly threw a second brick-bat at a rat which was crossing the river.

Mine host, in order to accommodate his friend, dined early; and when he went after dinner to enjoy the evening fishing, he found that the miller had turned off the water, and that the river was nearly dry. So he went back to tea.—*Rod Cottage, River-side.* R. P.

EVER LEARNING.

MAN, though destined to immortality, will never acquire a complete knowledge of the whole range of the Creator's operations, even during the endless existence which lies before him; for his faculties, however much expanded in that state, will be utterly inadequate to grasp a scene so boundless and august. It will be a part of his happiness that he will never be able to comprehend the universe; for at every period of his future existence he will still behold a boundless prospect stretched out before him, with new objects continually rising to view, in the contemplation of which, innumerable ages may roll away without the least apprehension of ever arriving at the

termination of the scene. Were a superior intelligence ever to arrive at such a point, from that moment his happiness would be diminished, his intellectual powers would lose their energy, his love and adorations of the Supreme would wax faint and languid, and he would feel as if nothing new and transporting were to be added to his enjoyments throughout all the periods of his future existence. But the immensity of the universe, and the boundless nature of the dominions of "the King Eternal," will forever prevent any such effects from being produced in the case of all virtuous and holy intelligences.—*Dick's Sidereal Heavens.*

MANUAL OF MANNERS.

CHOICE OF BOOKS.

ON the choice of books, much more may be said than seems necessary here. Those that are useful and agreeable are always preferable to others which are merely intended for filling up an idle, or amusing an uneasy hour. Time spent in perusing books of mere amusement, is time wasted. Those which, in informing the mind, entertain also the fancy, are the most to be recommended; but in reading, as in every thing else, a regular plan must be adopted, if it is to be of any permanent advantage; mere desultory reading being profitless and unsatisfactory. Dr. Johnson once observed, "that if any man would employ in reading that time which he would otherwise waste, he would answer for it, if he were a man of ordinary endowments, that he would make a sensible man." Desultory reading, it is true, is better than no reading at all. The learned moralist quoted owed the greater part of his vast acquirements to his practice of reading some part of every book that came in his way, and never losing an opportunity of storing his mind with information. He used to advise young people never to be without a book in their pocket, to be read at by-times, when they had nothing else to do. "It has been by that means," said he, "that all my knowledge has been gained, except what I have picked up by running about the world, with my wits ready to observe, and my tongue ready to talk. A man is seldom in a humour to unlock his book-case, set his desk in order, and betake himself to serious study; but a retentive memory will do something;"—and no time is lost that is devoted to judicious reading.

At the present day, so many new publications are continually issuing from the press, that a proper distribution of time as regards reading is absolutely necessary, to enable any reader, however constant, to keep pace with a tithe of the books on subjects interesting to him, that he would wish to peruse. To enumerate what books ought to be read, would be out of place in a work of this kind; but a few remarks may be hazarded as to selection of subjects for perusal.

Youth is the most fitting season for cultivating and improving the mind. History should early form the most prominent part of reading. This kind of information, which will always prove useful, is indeed indispensable. The reading of poetry forms a pleasing, and indeed to some persons a necessary recreation in the midst of more important studies.

What is called light reading is not always

to be rejected, for there is sometimes much knowledge of the world displayed in it; but it ought to be selected with judgment.

Novels form a species of reading entirely apart from all other kinds. Their principal object is entertainment; and when from the pen of a skilful and experienced writer, the sketches of life and manners which they contain render them at all times agreeable, and generally instructive companions. Care should be taken, however, that novel-reading does not become a habit; for, when it does, it is very difficult to get rid of, and is calculated to do more harm than even a passion for the theatre. Moralists usually object to novels; but simple and harmless recreation, in whatever shape it comes, ought not to be objected to, provided it does not take the place of better employments, or generate a taste for unworthy pursuits. Formerly, novels were not fit to be put into the hands of youth; but an essential improvement has taken place both in the matter and the manner of these productions; and although young persons ought not to be allowed to choose them indiscriminately, they certainly should not be prevented from occasionally reading a good one, that they may see the manners of society even through an artificial source, and learn what is doing in the current literature of the day. Romances ought to be rejected entirely.

When it is recollected that a habit of judicious reading acquired in youth will bring delight and enjoyment to age, it ought to be assiduously cultivated as opportunity offers; intellectual pleasures being the purest and most lasting of all.

"The finest rule," says Legh Richmond, "I ever met with, in regard to the choice of books, is this:—Books are good or bad in their effects, as they make us relish the word of God the *more* or the *less* after we have read them.' There are too many valuable books, on a variety of subjects, which ought to be read, to allow of time to be dedicated to unworthy and useless ones."

PUNCTUALITY.

IN every requirement of life, punctuality is indispensable. In business, it is so necessary that it has become a proverb. To ensure your own comfort and respectability, it is essentially requisite that you should in all things be punctual; although too much nicety in any thing—that is, a rigid exactness, an uncalled-for scrupulousness—is to be carefully avoided. As regards the demeanour, such a habit would lead to punc-

tiliousness, and in dress to precise formality or effeminacy. But punctuality is a very different principle, and ought to be sedulously attended to, in all the transactions in which man is engaged. In correspondence, particularly, it ought to be the invariable rule. Besides the embarrassment and confusion which arise from the accumulation of unanswered letters, there is a danger of loss of friends by neglecting to acknowledge their communications till it is too late. This would easily be prevented by following the Duke of Wellington's plan, and answering every letter, no matter on what subject, if it requires an answer, as soon as you can after receiving it. The late Sir John Sinclair, Bart., declared that he once caused an influential supporter of his own to become a determined and active enemy, by delaying to reply to a note which he had received from him some time previous to his election for Caithness; and this proved a very salutary lesson to him for the future.

It was the advice of Lady Percival to a young acquaintance, that "when he had made friends, never to lose them through neglect, although they might not be immediately near." The young and high-spirited are very apt, in the allurements of society, or from an undue attachment to their own pursuits, to forget persons who have been kind to them, and thus often lose, through neglect, the good services of many who might otherwise have essentially befriended them.

Punctuality as regards truth is the soul of confidence. A person who, even in one instance, should fail to be punctual, is not willingly trusted again.

There is one species of punctuality which is most essential to comfort—and that is, as regards a dinner invitation. Some people think that, by arriving a little *before*, or precisely *at* the hour appointed, they will be considered as having come too soon, while the not coming till a little beyond it adds to their importance. But this is a mistaken idea. In genteel society, no family waits beyond the hour fixed; and if you should arrive after the company have taken their places, you will be received, for form's sake, with as much courtesy as the rest, but you will be deemed by all present ignorant of what is right. The want of punctuality, when it thus causes an interference with the comforts, or a change, though momentary, in the arrangements of others, is extremely reprehensible.

Punctuality as to time is very important. In making an appointment with any one, you are bound, both in honour and duty, to keep it exactly at the hour; for, however much you may be disposed to squander

away your own time, you have no right to waste that of another which may be pressing and valuable; and you would not like to be kept waiting yourself.

In conclusion, under this head, it may only farther be observed, that by being always punctual, you will best consult your own convenience, and that of others.

CONFIDENTIAL INTERCOURSE.

THERE is no purer pleasure in life than what springs from friendship when founded on esteem. We should early accustom ourselves to the cultivation of those qualities and recommendations which will gain friends, and never neglect any means, consistent with propriety, to secure and preserve them when once obtained. It was a saying of Dr. Nicholls, that to form intimacies, and choose for our friends only persons of known worth and integrity, is a point of wisdom. By doing so, we shall be sure to retain them as long as our conduct entitles us to the continuance of their good opinion.

Among young persons, confidential intercourse is often the consequence of newly-formed attachments. Without reflection or discretion, many persons of open and sanguine temperament attach themselves to a favourite companion and make him the confidant of all their thoughts and feelings. There can be nothing more pleasing than this, so long as it lasts. Distrust is not the inmate of the youthful breast. In more advanced life, however, it requires tact to choose, and prudence to retain friends; and, as a general rule, it ought to be kept in mind that unreserved confidence should not be placed in any one. The best policy certainly is, to be very guarded as to informing any one of your affairs or plans; because there is no security against your being deceived, if you do so; and undue familiarity never yet was known to be productive of any good.

There are those who, for their own ends, will worm themselves into your confidence; and when they have obtained their object, will turn your unreserved communications made to them against yourself. Secrets affecting your happiness, your feelings, or your prospects in life, which you have told with a perfect reliance on their honour, will be divulged without shame by many who, having no farther interest in retaining your friendship, will betray your confidence, and ridicule your foibles, for the sake of a heartless laugh.

Any one who keeps a diary is a dangerous person to admit to any degree of confi-

dential intimacy, as, in his affected ambition to chronicle every thing he sees and hears, your most unguarded observations will not escape being transmitted to his flippant pages. To write a journal of this description is a mark of the most consummate vanity, as well as a strong proof of an idle disposition. He who is guilty of the practice, unless his station or his character authorizes it, is generally a coxcomb, whose chief characteristic is a want of judgment, but whose real error, if it should not be called by a stronger name, is an utter want of principle. A person who would thus unnecessarily take a liberty with those un-

reserved communications which ought to be held sacred, and, from a spirit of arrogant presumption, can calmly set himself down and betray your most cherished secrets, would not scruple to pick your pocket, were he not restrained by the fear of punishment and exposure, rather than by any motive of moral responsibility. At the same time, to keep a diary of daily events and occurrences, for the purposes of information and reflection, and not merely for showing off, and making idle observations on persons and things, will be found to be a useful habit, especially in matters of religion.

LINKS IN THE CHAIN OF NATURE.

It is very difficult to trace satisfactorily "the links of Nature's chain," in the several gradations by which they connect animal and vegetable beings. These links are as numerous as they are wonderful. Some of them are evident enough, but we are at a loss to determine whether others should be classed amongst animals or vegetables. Mr. Edwards seems to think that many of them may be deemed of a middle nature, partaking of both; for, though some of the polype and coralline species seem to adhere by roots, and increase, as vegetables do, by shooting forth young polypes from their sides, and by becoming perfect polypes from the divided parts of others, which are marks of vegetation, they have at the same time a power to move their parts, and put forth tentacula, or arms, with which they catch small insects, whereon they feed, thereby showing that they partake of an animal nature.

A person lately sent me an animal which fishermen call a sea-mouse, and which seems to partake of the properties of both fish and insect. It was about three inches

and a half in length, and was covered with beautiful silky hair on the sides, which put forth a variety of colours in the sun, like spun glass. The belly appeared like that of the wood-louse; and, like that insect, it had the power of rolling itself up on being disturbed. On each side of the belly there were twenty or thirty little fleshy excrescences, each of which had five or six black hairs in it, about a quarter of an inch long, with which the creature moved itself along. It is, I believe, an aphrodita, and is called by the French naturalists, *la taupe de mer*.

The humming-bird moth (*Sphinx stellatarum*) might almost be thought also to be a link between the bird and an insect. It hovers over flowers in a most rapid and elegant manner, as the humming-bird is said to do—unfolds its long tongue, and extracts the honey from flowers, making a humming noise the whole time. Its motions are so rapid, especially on a sunny day, that it is extremely difficult to follow them. There is also a wildness in its habits which partakes very much of those of a bird.

SOCIAL CHAT.

DELIGHTFUL is an evening's cheerful chat

With pleasant friends, especially to one

Who has been long away. The minutes run

With speed that all the talkers marvel at.

So much to talk about—so much to tell—

So many sleeping memories to awaken—

The various fates that absent friends befall—

Whom time has spared, and whom the grave has taken;

The tear to shed for those who've pass'd away—

The sigh to breathe for those who've gone astray—

Our times of darkness, and our days of light—

Our purposes and plans for coming years—

Our heavenly hopes, our earthly human fears—

And lo! 'tis time to say, "Good-night, dear friends, good-night!"

MACKELLAR.

The Plough, the Loom, and the Anvil.

VOL. II.

SEPTEMBER, 1849.

No. III.

HEAR BOTH SIDES.—No. II.

THREE months have now elapsed since we laid before our readers “a masterly view of the question” whether or not the farmer and planter were entitled to protection in their efforts to draw to the neighbourhood of their ploughs the loom and the anvil, and the men who use them, thereby making a market on the land for the products of the land. It was copied from *The Union*, the organ of the authors of the tariff of 1846, and we gave it in full for two reasons: first, because we desired that our readers should see the sort of views that, in the estimation of our opponents, are entitled to be considered “masterly;” and second, because we hoped thereby to induce the editors of that journal to imitate our example, and thus enable their readers to “hear both sides,” thereafter judging for themselves. In this we have been disappointed. *The Union*, after having volunteered the attack, (its first notice even of the existence of this humble journal,) has never ventured even to refer to the defence.

It was early obvious that its editors were not disposed to go so far in the manifestation of fairness towards their readers, but we still rested in the hope that their correspondent would favour us with a reply, showing what were the reasons that the power of consuming cloth and iron diminished under the compromise act until it reached the lowest point in 1842, and increased with every year of the tariff of 1842, doubling in the short period of its existence. It was an interesting question, and one that could not fail to afford to our friend “Common Sense” a fine opportunity for the display of his ingenuity; and as he had assured us that he had still in store “an impregnable array of facts to bear upon it,” we could not doubt that he would avail himself thereof. Here, too, we have been disappointed. “Common Sense” has been as silent as the editors of *The Union*; a fact for which we are unable to account, unless perchance it be that as his first budget of “facts” was abundantly sufficient to convince his readers that his theory was worthless, his second one—the “impregnable array”—proved sufficient to convince himself, and that he has thus become a convert to the doctrines of *The Plough, the Loom, and the Anvil*, without having had the magnanimity to acknowledge it. We wish, however, that he had first exhibited all his facts. It would have afforded us much pleasure to examine them for the benefit of others who, like himself, stand in need of instruction in regard to the “absurd and grotesque” theory that the land and its owner become richer with every step in the approximation of the producer and the consumer.

We have been especially disappointed in all this matter. It was, as we say, early obvious that *The Union*, under its then management, would not venture to republish our notes upon this “masterly view of the question,” but when it received an addition to its strength, in the person of the author of the celebrated letters of *Bundelcund*, we felt assured that the long silence would be broken, and that we should have columns of words to prove that every increase in the power of consumption under the tariff of 1842, was to be received as evidence of the impoverishing effect of the protective system, and

that the facts furnished by "Common Sense" did really prove what they were intended to prove, and did not prove the reverse, as we had said they did. Here again we were doomed to disappointment. The new editor of *The Union* proved no more valiant than the old one. "Common Sense" and they have abandoned the field together, after having entered it, preceded by a flourish of trumpets that must have induced their readers to believe that we were to be annihilated on the instant, thus affording another proof that sound and "sense" do not always travel in company. It costs little to make assertions, but much to prove them.

While deserting its distressed friend "Common Sense," and thus manifesting a total absence of that chivalric feeling which usually characterizes the sons of *the ancient dominion*, *The Union* frequently favours its readers with "masterly views" similar to that to which we furnished a reply, carefully avoiding, however, to permit its readers to see the opposite side of the question. One of them is now before us, and as we especially desire that *our* readers should "hear both sides," and thus be enabled to judge for themselves, we copy it in full, together with all that portion of the letter to which it refers that is important on the present occasion. A cause that is to be supported by aid of *selected* facts, or one that can be maintained only by shutting out from view the arguments of opponents, is unworthy the support of honest men. Such is not ours. We would, did our space permit, lay before our readers all that is said on the opposite side, rejoicing in the opportunity to demonstrate the almost universal falsehood of the facts, and hollowness of the arguments.

"The weekly letter of our New York correspondent," says the *Union*, "will be found in another column. It contains matter of great interest both to our manufacturers and to our agriculturists. The export of breadstuffs still continues, and the demand for cotton is sustained at an advanced price and in the face of large supplies. The free trade principles of the revenue bill of 1846 may now be considered as fully vindicated. They have been denounced for years as visionary; but now they have been subjected to the test of experience, and have more than fulfilled the expectations of their supporters. While the market for our agricultural productions abroad has been extended without producing commercial embarrassment by the reception of foreign goods in payment on liberal terms, the great consuming interests of the country have been enabled to become better customers to the manufacturers of the North. We accordingly find, that since the present revenue laws went into operation, our imports have been large enough under low duties to increase the revenues of the government some six millions of dollars per annum. Our export has been sufficiently great to prevent an unfavourable balance of trade, while the general prosperity which a sound commercial and financial policy has occasioned, enables our manufacturers to enlarge their establishments and extend their operations. This latter fact is fully established by the information which our correspondent furnishes; for the statistics which he presents, show that the amount of cotton taken by the manufacturers of the United States has increased more rapidly since the present law went into operation, than it did under the tariff of 1842. Under that tariff the whole increase in four years was 154,747 bales, while it has already—in less than three years—amounted to 130,000 bales under the present revenue laws. This estimate omits the quantities taken from the plantations for the use of the manufactories now springing up in the South, which is estimated at 75,000 bales for the last year, and 100,000 bales for the present year. And it is encouraging to reflect that the labour of the country receives its full share of the benefits which this increased manufacture confers. When manufactures are high, the consumption is limited, and the owners of capital and labour, in the form of machinery, receive nearly all the benefit of production; but when they are low, the consumption is increased, and a much greater amount of the raw material is necessarily consumed, and the labour employed in producing the raw material receives its due share of the value of the product. The operation of this principle is stated with great simplicity and force by our correspondent; and as it is one of great practical importance, we trust none of our readers will fail to give his letter an attentive consideration."—*Union*, June 23, 1849.

"Up to the present time the promise of business prosperity is flattering. The export

demand for produce continues good, and the news by the America to the 9th instant from Liverpool, is of further improvement, and an advance of one quarter pence per lb. in cotton, resulting from the cheerful aspect of the manufacturing districts and the favourable accounts from India, as well as partially by those accounts of damage done to harvest on this side, which are not likely to be fully sustained. The crops of France and England promise well; but there are already accounts of a re-appearance of the potato-rot in Ireland, supported by a continued demand for Indian corn. The political aspect of Europe has not materially changed; and the prospect of any serious military movements on a scale so extended as to disturb the industry of Western Europe for the present year is not imminent; and the probabilities are that the consumption of goods, amid the favourable circumstances for cheap production and the low price of food, will continue considerable, supporting the price of cotton under the large receipts. It is a gratifying feature of our own markets that the free trade principle on which the tariff of 1846 was projected has so far vindicated itself, that the quantity of raw material taken by American manufacturers increases more rapidly under the low tariff than it ever did under the protective scale. The quantities taken by United States manufacturers from the deliveries on the seaboard, are represented in the following figures:—

United States Cotton.—Consumption.

	1848.	1849.
Stock on hand September 1	197,604	144,815
Received to June 14	2,148,431	2,598,581
Total supply, bales	2,346,035	2,743,396
Export Sept. 1 to June 14	1,556,431	2,019,502
Stock June 14	362,374	276,991
	1,918,805	2,296,493
United States consumption	427,230	446,903

This gives an increase of about 20,000 bales for the ten months over the same period of last year. The comparative consumption for several years has been as follows:—

	Bales.	Increase.
1842	267,850	
1843	325,129	57,379
1844	346,744	21,615
1845	389,006	42,262
1846	422,597	33,591
1847	427,967	5,380
1848	531,772	103,805
1849, 10 months	446,903	20,000

“ Under the tariff of 1842, the whole increase of consumption in four years was 154,747 bales; and thus far, under the tariff of 1846, the increase is already 130,000 bales, taken from the ports. The quantities of cotton taken from plantation by the rapidly multiplying factories of the South are not here taken into account. Those quantities were last year placed at 75,000 bales, and will this year fall not much short of 100,000 bales. Thus the consumption of the raw material in the United States has now reached a larger figure than the amount taken by British consumers. The enhanced consumption, it is also to be considered, is by Southern and Western factories, which have no protection against the New England factories of immense capital, and which manufactured this year for Southern and Western consumption equal to 535,200,000 yards of cotton cloth, against an importation from England of 17,000,000 yards. The exports of cotton goods of Eastern manufacture were nearly 50,000,000 yards, and re-export of foreign manufacture 10,000,000 yards. Hence the production of Southern and Western factories, being equal to 120,000,000 yards, had to contend against 485,000,000 yards of New England production paying no duties, and 7,000,000 yards foreign paying 30 per cent. *ad valorem*. It is evident that if the South and West have so successfully withstood the free competition of New England, it is out of the power of Old England to affect them at all, while the low prices that have ruled under the free competition have induced a greatly extended consumption of the raw material.

“ It is a consequence of selling large quantities of goods at low prices that the producer of the raw material and the operative obtain a larger share of the profit at the expense

of capital. When a great deal of cloth is to be given for a comparatively small amount of money, there is a larger demand for raw material, and for labour to work it up. This increased demand raises the value of both, and the competition lies between capitalists, whose profits are diminished. For this reason it is that tariffs are so eagerly sought by the companies and millionaires. By preventing the competition of foreign capital, prices are kept at such a rate as gauges consumption within the production of the raw material and the supply of labour; both these, therefore, are at the mercy of the manufacturer, and the margin of his profits is great in proportion. The moment, however, capital competes with him, and lower prices, under the continued rivalry of capital, stimulate consumption, the operative and the producer of the raw material are emancipated. On this healthy basis are the factories of the South and West growing up, supported by a steady currency; and they will continue to grow as they have done under the severe competition of the large capital of the East, until the local demand being supplied, the cotton will go down the Mississippi in the shape of cloths, instead of cotton."

The demand for cotton is stated to be "maintained at an advanced price, and in the face of large supplies;" but what is the price that is maintained? Is it not less than the actual cost of production? Has the planter received, on an average, five cents per pound during the season? And can he replace it for less than six? The price had, and has, advanced somewhat, but instead of that advance being "in the face of increased supplies," it was, and is, in the rear of a destructive frost, and of freshets, that threatened to diminish by at least one-third the crop of the present year. Was it not, too, in the rear of a vast reduction of freights, owing to the total failure of the fond anticipations of the late Secretary in regard to the effect of his measures in increasing our foreign trade? Have not freights fallen within a few months almost two-thirds, and is not all this reduction added to the price of cotton? And would they not have fallen, but for the discovery of *California gold*, to a lower point than in any period we have ever seen? And are they not daily falling? At the moment at which we write, the freight upon a barrel of flour to Liverpool is quoted at only 1s., thus showing a great reduction even from the very low point they had reached when last we touched upon that subject, and yet the readers of *The Union* would search its columns in vain for such information. When men find themselves compelled thus to misstate some facts, and omit others, it is because the real facts will not serve their purpose, and because their object is that of mystifying their readers. It is well known that the policy of the government has driven the whole labour power of the South into the production of cotton, the natural result of which has been such an excess of supply that planters are now everywhere seeking to substitute sugar in its place, and it is equally well known that the sugar planter stands more in need of protection than the manufacturer of cloth or iron. It is equally well known that the policy of the country has tended to shut up furnaces and mills, and to drive capital into the building of ships, and that now mills, furnaces, and ships, are all equally unprofitable; but these facts find no place in *The Union*. The whole system is one of exhaustion, as must be any one that tends to separate the loom and the anvil from the plough and the harrow. With all the vast increase of shipping, the earnings of the present year will be, notwithstanding the California accident, less than in any previous one for many years past, and with the all the vast increase of Southern population, the average crop of cotton for last three years is but little more than that of 1840, and *the money product is far less*, whereas had they consented to take for themselves the protection needed for bringing the loom and the anvil to take their places by the side of the plough, the home consumption would now be double what it is, and the price of that which they could spare for export would also be doubled. We should be glad if the editors of *The Union* would inform us the cause of the great reduction in the price of cotton, and what would probably be the

effect of the consumption of an additional 200,000 bales at home, attended by a diminished necessity for dependence on foreign markets.

We are here told that "the great consuming interests of the country have been enabled to become better customers to the manufacturers of the North," when it is notorious that many of the factories of the North are absolutely stopped—that furnaces have been blown out—and that of sixteen rolling-mills employed in the production of railroad iron, twelve are absolutely idle, and the remaining four are running for the supply of orders received a long time since, before the tariff of 1846 came into *practical* operation. If we look around among the smaller manufacturers, it is everywhere the same. Thus, paper, hats, shoes, books, and all other commodities required for the use of man, are superabundant, and the consequence is that there is little demand for labour. Labour is therefore superabundant, and the labourers are buying little food or cloth, and few shoes or books.

"Our export has been," as we are told, "sufficiently large to prevent an unfavourable balance of trade," but of what has that export consisted? To a large extent of *evidences of debt*. The tariff was to be altered that the market for farmers and planters might be enlarged, and we are now importing large quantities of Polish food and Hindoo cotton, in the form of cloth and iron, and paying for them in certificates of stock, upon which we shall have to pay interest until the day of repudiation comes round again. We are playing over again the same game as from 1836 to 1842, and if it be sufficiently long continued the results will be the same. Our people are everywhere idle, and we import foreign labour. Our food is being everywhere stored up, and we are importing foreign food in the form of cloth and iron. Our farmers complain of the price of food, and they close the mines, the mills, and the furnaces, that men may go West to raise more food and increase the surplus, and thus diminish the price.

The "free trade principles" of the compromise bill were fully "*vindicated*" in the downfall and ruin of 1841 and 1842, as are those of the tariff of 1846 now being "*vindicated*" in the destitution that has fallen upon tens of thousands of hitherto prosperous labourers, in the total failure of the realization of the idea that the market abroad for food and cotton would grow commensurately with an increase in our demands upon Europe for cloth and iron, and in the consequent great fact that we are now contracting an immense debt that must result in ruin, whenever such a change shall take place in the condition of the money market of Europe as shall render it expedient to demand payment of the debt we are now contracting, as will be the case at the next "crisis" in the English money market. We commend to the editors of *The Union* a perusal of the following passage from the "New York Herald," also a free trade journal, but one in the conduct of which "common sense" may very often be found, for its editor has no party to defend:—

"The fall importations are likely to be exceedingly large, and they must be paid for in some way.—Whether there is a demand for foreign fabrics here, or not, our markets will doubtless be flooded with them, and they will be forced off in the usual way, through our auction rooms. The manufacturers of Great Britain must find markets for their goods; and in the present state of Europe, the prospect is more favourable as regards consumption in this country, than in any other part of the world. We may, therefore, expect a very heavy importation; and in the absence of any important demand for our breadstuffs, or advance in prices of cotton, we must rapidly fall in arrears on our foreign trade. The demand for our public stocks, and the proceeds of the sales have added largely to the credit side of our account, and offset a large per cent. of our importations. When this resource becomes reduced, or ceases altogether, and we have to depend entirely upon the proceeds of our exports of merchandise, we shall find a different state of things than exists at this moment, and we may find an outlet for the employment of a portion of our idle capital. *The steady and active demand experienced for such a length of time for our public*

securities, has placed an immense amount in the hands of foreigners, and the semi-annual interest will hereafter amount to several millions of dollars. This will be another drain upon us—a drain which we now do not feel; for the remittances are made principally in stocks, and do not come directly out of the industry of the country; but when ten or twelve millions of exports will be required to pay simply the interest on our debts owed abroad, we shall feel its loss, or rather its abstraction, from our ordinary resources, to liquidate outstanding claims. This is the effect, in a measure, of such a large amount of our evidences of debt being held by foreigners. It is an evil which we are at present favouring and increasing as much as possible, without having a thought relative to its effect."

The great difficulty with most of these professional political economists is that they have no practical knowledge. They have studied so many politico-economical books, that they have by slow degrees arrived at the point at which all men of *real* "common sense" begin, *i. e.* that all trade ought to be free. The latter see, however, that the great and important trade is between man and his neighbour man, and that the small trade is that between far distant men. They see that everywhere men desire to have blacksmiths and shoemakers, cotton and woollen-cloth makers, and iron makers, in their neighbourhood, and that the more nearly they can be brought to them the greater is the facility of obtaining shoes for horses and men, and cloth and iron. They see this desire developing itself on all occasions in a constant effort to bring the loom and the anvil to the side of the plough, and they see almost perpetual ruin following the effort, because of changes of policy abroad, that could not have been anticipated, still less guarded against. Seeing all this, they have arrived at the conclusion that there must exist disturbing causes preventing the possibility of the establishment of universal freedom, but that it may be obtained through the means of effectual protection to the great and really important trade between men and their neighbour men, and they are confirmed in that belief by the fact that those manufactures which have most required protection are now those which least require it. They see that in the desire for freeing the country from the colonial system which prevented the establishment of manufactures, may be found the most important of the causes of our Revolution, and that from that time to the present, the most eminent men—our Washingtons, and Jeffersons, and Jacksons—have seen and felt the necessity for "bringing the manufacturer to take his place by the side of the agriculturist." "In place of feeding the paupers of Europe," said President Jackson, "let us feed our own,"—yet he was fully aware that under natural circumstances freedom of trade among all men, the near and the distant, would be the most profitable to all. He, however, had practical knowledge, of which these men are totally destitute. They are political economists to the point of repeating, parrot-like, the words, "free trade," but beyond that their knowledge does not extend.

Moliere's *Bourgeois* was rich and ignorant. He desired to be instructed, and he took a teacher. Among the earliest of his lessons was that which taught him that he had all his life been talking *prose*. The discovery delighted him, and he would teach his neighbours that they also had been talking *prose*, and in this effort to make known the extent of his knowledge he proved the extent of his ignorance. So is it with these men. They can say "free trade," and they can press into their service "facts" that they suppose will prove its advantage under all circumstances; but let them meet with difficulty, and they become as silent as our friend "Common Sense," who desired to prove the absurdity of protection by facts which required only to be properly studied to prove its advantage. Similar cases, however, abound, and if our readers desire to find them, they need only refer to the files of *The Union*, the letters of *Bundelcund*, the Patent Office Reports, and the Reports of the late Secretary of the Treasury, the

authors of all of which are living examples of the danger of "a little knowledge."

Among the blunders of this class of men is that which results from the omission of all attention to that most important element in every politico-economical calculation, called *time*. At the end of the first month of his new tariff, the late Secretary set himself to calculating its effects, whereas every man of any practical knowledge knows well that considerable time must elapse before the effects of any such measure begin to be felt. Prosperity does not come or go with the passage of a law, but with its practical operation. The passage of the tariff of 1842 did not remedy the difficulties under which the country laboured, but it enabled men to construct mills and furnaces, by aid of which a state of prosperity was restored. The man who is driven from the mines to seek the West, continues for a year to be a consumer of food and a customer (though on a smaller scale than he before had been) to the farmer, but in the second year he ceases to be a customer and begins to be a rival. The hundred thousand people that have been *driven* to the West this year, will not be felt as producers until next year, and then—and *scarcely till then*—it will be that the farmers of the Union will feel the evil effects of the abolition of the tariff of 1842. All these things are obvious to men of plain common sense, but they have studied few politico-economical books, and they have no theories to maintain in opposition to the common sense of the nation for a hundred years past. They feel under no obligation to teach their neighbours that they have been talking *prose* all their lives, nor to lisp *free trade* without understanding it, as do so many of the *great men* of our day.

The existing tariff—the great measure that was to emancipate labour and capital from the grinding oppression of that of 1842—the measure that was to raise wages, and that has so far depressed them that labourers find increased difficulty in obtaining food, fuel, or clothing—the measure that was to raise the value of capital, and that has so far depressed it that men gladly purchase stocks yielding little more than five per cent. because of the impossibility of employing capital to advantage; that great measure, we say, went into operation, nominally, in December, 1846. Practically, it was almost altogether inoperative. The great railroad speculation of Europe had produced a vast demand for labourers and for iron, and both were high in price. Well-paid labourers consumed largely of food and cloth, while the potato-rot produced a vast demand for food for Ireland, and thus all things were unnaturally high, and as the new tariff was altogether an *ad valorem* one, it followed that duties were high, and sufficiently protective. The railroad speculation broke down, and the demand for labour ceased, and therewith there was a cessation of the demand for cloth and iron, and the makers of cloth and iron were forced to work at diminished wages, and the prices of cloth and iron fell, and then for the first time, at the close of about a year and a half from the first of December, 1846, did the tariff of 1846 come into practical operation.

In the table above given, the cotton crop of 1846-7 is set down, as is usually done, as the crop of 1847, and that of 1847-8 appears as the crop of 1848. The whole business relative to the latter, was closed by the month of July of that year, and it was only then that the tariff of 1846 was coming into practical operation. One of the effects of the system, however, had begun to be experienced by the cotton planters. The total failure of credit in England had crippled the merchants and manufacturers of that country to so great an extent that they were unable to continue to act as brokers for the distribution of the great staple of the South, and the price of cotton fell, not because of a surplus in the market, but because the great broker, upon whom the planters had been so determined to depend, had, for the fifth

time in a quarter of a century, become bankrupt. This fall in the price of cotton followed the great demand for food, and the farmers throughout this country were enabled to consume largely of cloth, and the manufacturers were compelled to drive their mills at the highest speed to enable them to meet the demand thus produced at the cost of the planter.

The editors of *The Union* inform us that in less than three years from the adoption of the new system, the increase in the consumption from the growth of manufactures has been 130,000 bales, whereas in the four years of the tariff of 1842 the increase was but 154,000 bales. This we must presume they meant for an honest statement, and that any error in it arises only out of the total deficiency of practical knowledge to which we have before referred; but what are we to think of men who undertake to teach the world in regard to these great questions while exhibiting throughout so many evidences of an inability to comprehend the true state of the case? It is true that they do not commit greater errors in this respect than may be found in the Treasury Reports, all of which are like to that referred to in our last. All of them show that their author had gathered all his knowledge from books that might be wrong or right, and that he did not possess the practical knowledge required for enabling him to discriminate between the right and the wrong.

The crop of the present year, ending with the last of August, is the first that can be considered as subject to the operation of the tariff of 1846, and here we see that, notwithstanding the excessive depression of prices, there is in reality not only no increase, but an absolute diminution. The home consumption of the crop of 1847-8, was 531,000 bales. That of the present year's crop, in ten months, is here given at 446,000, and to make the quantity equal to that of the previous year, it would be necessary that for the remaining period the consumption should continue at the same rate. What probability exists that such is or will be the case, may be judged from the following facts, by which, too, our readers will be enabled to judge of the fairness of the statements offered by *The Union* for the consideration of its readers.

It is well known that when prices are so low as they have been in the present year, the larger operators supply themselves early, and that the subsequent demand is consequently greatly reduced. The effect of this will be shown by the following statement:

Of the crop of 1847-8, there were taken in the first seven months, 281,497 bales,* being at the rate of little more than 40,000 per month, leaving for the last five months, 250,000 bales, or at the rate of 50,000 per month. Of the crop of 1848-9, the quantity taken in the first six months was 307,303 bales,† or at the rate of 51,000 per month, leaving to be taken, to make up the sum of 531,000, only 224,000, or less than 38,000 per month. If our readers will now re-peruse our extract from *The Union*, they will find the whole effect of the article to be produced by comparing the early purchases of the present year, which were *large*, with the early purchases of last year, which were *small*.

The real facts we will now show, made up to the time at which we write:—†

	1847-8.	1848-9.
On hand in Northern ports, Sept. 1	109,909 . . .	57,997 . . .
Shipped to Northern ports	619,381 . . .	759,833 . . .
	729,290	817,830
Exported from do.	186,892	252,551
On hand in do.	59,317	82,919
	246,209	335,470
Taken for consumption	483,081	482,360

The quantity taken by spinners, thus far, is shown to be 700 bales less than in the previous year. There remain yet about five weeks to make up the year, and we may now estimate what their consumption is likely to be, by ascertaining what has been that of the few past weeks.

The first six months gave	307,303 = per month	51,200
March 1 to June 14, gave	139,600 =	" 40,000
June 14 to July 25, gave	35,000 =	" 26,000

The remaining period may give 30,000, but that is exceedingly doubtful, for within a month we have seen notice of the total stoppage of three or four large factories in our own immediate neighbourhood, and the same causes that stop them must tend to produce the stoppage of others. Allowing, however, that 30,000 additional bales will be required, we obtain as the consumption of the year 512,360, against a consumption of the previous year of 531,772, *being a falling off of 20,000 bales in a year, instead of an increase of 20,000 in ten months.*

The consumption and the exportation of cotton cloth for the year, notwithstanding the low prices, will thus fall short of last year not less than 20,000 bales; and then the following will be the result of the years affected by the tariffs of 1842 and 1846:—

Tariff of 1842.		Tariff of 1846.	
1842-3 increase	57,379		
1843-4 "	21,615		
1844-5 "	42,262		
1845-6 "	33,591		
1846-7 "	5,380		
1847-8 "	103,805		
1848-9 decrease			20,000

This, however, tells but a small part of the story. Every one knows that the consumption is greatly affected by the price.

In 1843, the crop was large, (952,000,000 pounds,) and the average price was six cents, the consequence of which was an increase in the home consumption to the extent of 57,000 bales.

In 1844, the crop was only 812,000,000, and the price exceeded eight cents, and yet the home consumption increased 21,000 bales, while that of the rest of the world must have decreased.

In 1845, the crop was 958,000,000, and the price was under six cents, and there was a further increase in the home consumption of 42,000 bales.

In 1846, the crop was 810,000,000, and the price rose to about eight cents, notwithstanding which the home consumption grew 33,000 bales, and thus with a crop but little exceeding that of 1844, the increase in the home demand was 75,000 bales, and the foreign one must have remained stationary.

In 1847, the crop was but 711,000,000, and the price rose to above ten cents, notwithstanding which the home demand rose 5000 bales, the total increase over that of 1842 being 160,000 bales, while the increase in the crop was only about 70,000 bales, showing *the extraordinary permanence and certainty of the domestic market as compared with the foreign one.*

In 1848, the crop was again large, and the price fell to seven cents, and the home consumption increased 103,000 bales, and exceeded by 206,000 the quantity taken in 1843 when the crop was nearly the same, and showing, consequently, a large decrease in the power of consumption abroad.

In 1849, the crop has risen to 1,100,000,000, and the price has fallen to an average of probably $5\frac{1}{2}$ cents, and yet the consumption, so far as the sea-board is concerned, has, *for the first time in seven years*, not even maintained its ground, but has absolutely gone backward, while our population has

largely increased. We should be glad our friends of *The Union* would account for all these facts. If the consumption of 1847, with a crop of 711,000,000, and an average price of above ten cents, increased 5000 bales, what would be the increase of the present year, with a crop of 1,100,000,000, had the tariff remained unchanged? Would it not be at the least 100,000 bales, and would not the abstraction of that quantity from the foreign market add to the price of the whole quantity at least one cent per pound, and would not that put into the pockets of the planters at least \$11,000,000? Suppose, however, that the tariff of 1842 had been adopted as the settled policy of the nation, and that we were now, as we should be, consuming 250,000 additional bales, would not the price of the whole crop be ten cents instead of five, and would not that give to the planters \$55,000,000? And is not that the price they are now paying for their determination not to consume on the land the products of the land?

We are told, however, that the Southern factories are growing in number. They are, and we rejoice to see it. The tariff of 1842 gave the impetus to this movement, and it now goes on, requiring "no protection against the New England factories of immense capital," because aided by New England machinery and New England skill, dearly paid for by New England men who have had to bear the weight of the enormous changes of our system during the past twenty years, by which tens of thousands have been ruined. They *have* no protection against *New England*, but they *have* protection against *Old England*, and *without it they would scarcely continue in existence for a month, for without it the whole South would be inundated with cheap and worthless goods, and their markets would be ruined.* The planter requires protection for his sugar and his cloth, quite as much as his Northern neighbour.

We are here gravely assured that the consumer benefits largely by the low prices, but whence come the low prices? Is it not from the depression of the South? And can the South consume as much cloth with cotton at five cents, as they could do at ten? Certainly not. The South is now clothing the world at its own loss, by selling its cotton at less than the cost of production, and the power to consume cloth is there diminished, and would be still more so, were it not that it is to a certain extent maintained by the introduction of a new species of employment, that would long since have been naturalized there had the plough, the loom, and the anvil been permitted to come together. The consumption of the North diminishes, notwithstanding a vast increase of population, and notwithstanding the great diminution of cost, and it does so because the people who worked in mines, and furnaces, and mills, are idle and unable to sell their labour to obtain the means of buying food, or cloth, or iron.

Every increase in the ratio of consumers to producers tends to raise the price of food and cotton, and of all other agricultural products, and to enable farmers and planters to consume more largely of cloth and iron, shoes and hats, paper and books, and the producers of these latter commodities are thereby enabled to consume more largely of food and cotton, and thus it is that the owner of land benefits by an increase in the home consumption of the products of the land. Every man that is *driven* to seek the West, there to raise food or cotton, tends to diminish the power of farmers and planters to consume cloth and iron, and to diminish the power of the makers of cloth and iron to consume food or cotton, and thus it is that the owner of land is injured by a diminution in the home consumption of the products of the land.

We now ask of the editors of *The Union*, and we ask it as a favour—in the absence of their friend "Common Sense,"—that they would explain the

following facts by aid of the "principle" that is, as they say, "stated with great simplicity and force" by their correspondent :

In 1842, we imported little, and were unable to pay the *interest* on our foreign debt.

In 1846 and '47, we imported largely, and paid off much of the *principal* of our debts.

In 1849, we import about the same amount per head, *and run largely in debt*.

In 1846, the demand for labour was great, and men consumed largely of coal, the production of which trebled from 1842 to 1847. In 1849, men are unemployed, and the consumption of fuel is stationary.

From 1842 to 1847, the consumption of iron doubled. In 1849 it has become stationary.

From 1842 to 1847, the consumption of cotton and woollen cloth was doubled. In 1849 it has become stationary.

In 1846 and 1847 there was universal activity. In 1849, there prevails a "masterly inactivity," because houses and ships, and roads and mines, and mills and furnaces, have ceased to be profitable. Capital, food, cotton, wool, cloth, sugar, shoes, paper, and all other commodities needed for the convenience and comfort of men, are surplus, and the universal desire is to diminish production to the level of consumption, while tens of thousands of labourers can purchase neither food nor clothing. The "war against labour and capital," agreeably to the doctrine of *The Union*, has ceased, but with each successive day labour and capital become less productive.

We should really be glad to see all these curious phenomena explained, and would most respectfully ask the editors of *The Union* to commence the explanation by copying our reply to their friend "Common Sense," with their comments thereon, which we promise faithfully to republish, for we feel desirous to make our readers perfectly familiar with the shallowness of doctrines that require to be supported by aid of a constant perversion of facts.

In conclusion, we would beg to invite their attention to the following passage, by a writer of eminence* belonging to their own school :—

"If a political economist finds himself puzzled by any recent or present commercial phenomena ; if there is a mystery to him in the late or present state of the productive industry of the country, which his knowledge of principles does not enable him to unriddle, *he may be sure that something is wanting to render his system of opinions a safe guide under existing circumstances.*"

Let our opponents explain the facts we have given them, if they can. If they cannot, let them admit that "something is wanting to render their system of opinions a safe guide under existing circumstances."

P. S.—At the moment when this article is going to the stereotyper, we have received a number of *The Union*, containing a short editorial to which we think it worth while to invite a moment's attention on the part of our readers. When we pointed out the extraordinary blunder of "Common Sense" in asserting that "if the whole cotton, woollen, and iron interests of England were transported to this country, they could not consume the surplus grain and provisions consumed by American farmers," we little expected to have it repeated by any one claiming to possess even the slightest knowledge of the subject, and yet here we have it again, and this time it comes from the editors themselves !

"If all the operatives employed in the cotton, woollen, and iron manufactories in

* J. S. Mill.

England were transported to the United States, *they would not be able to consume our surplus food*; and if we had enough of men and machinery to manufacture all the cotton produced in the United States, it would not add enough to the consumers of flour and corn to consume half the surplus which we raise. Besides, it would compel the manufacturers of cotton themselves to seek a foreign market for at least \$100,000,000 in value of their manufactures. And should not they, too, have a home market for their products? Certainly they are by right as much entitled to it as the farmer and planter, for whose interests *they profess such tender affection*. How idle, then, is it to talk of a home market for the various products of this vast country. Yet we have many superficial philosophers who imagine that they can fix the machinery by which all our immense interests can be equalized and made to harmonize. They can never be equalized, and they can be made to harmonize only by letting them alone.

"Not many years since the hobby of the protectionist was to protect *manufacturers*. Now, since the manufacturers have become nabobs, with princely incomes, their theory can be carried out only by furnishing a home market; or, in other words, protecting the *farmer and planter*. They do not care so much, now, about protecting the manufacturer, but the *farmer* must be protected. He will get such protection from these pretended friends 'as vultures give to lambs, covering and devouring them.'"

Thus is it ever with these men. Reckless assertion is made to take the place of argument, and the assertions of no two of them, nor of any one of them for any two periods of time, can be made to correspond. The late Secretary is of opinion that if protection be established, the time is not far distant when the manufacturers will be clamorous for perfect freedom of trade. The editors of *The Union* think that they will not. If these professors of political economy could only master the A B C of the science they undertake to teach, they might now and then—at long intervals—agree with each other, or with themselves.

In conclusion, we would beg to recommend to them a perusal of the following statement of facts as they now exist in Tennessee, after which we should be glad they would furnish replies to certain questions addressed by us, in May last,* to the Editor of "*The Nashville Union*," and still *unanswered*.

"How is it in Tennessee? The census shows that we have 275,000 persons employed in agriculture, and but 17,000 employed in manufactures and the trades. What an unequal division of labour is here! Contrast it with Massachusetts, where 87,000 persons are employed in agriculture, and 85,000 in manufactures. In Tennessee we make a vast surplus of the bulky products of agriculture to transport to an inadequate and distant market. In Massachusetts a good home market is provided for their home products—consumers are placed side by side with producers. What is the result to the agricultural interest? In Nashville the average exporting price of Indian corn, our chief staple, is 20 cents per bushel—in Boston and Lowell, and elsewhere through Massachusetts, Indian corn averages 70 to 75 cents per bushel; and even at that high price, other products of labour are much more profitable than corn is, imported into Massachusetts. In Tennessee the average value of land per acre, as shown by the official returns to the Comptroller's office, is but \$3.03—while in Massachusetts, leaving out certain commercial counties embracing Boston and other commercial towns, where the value of land is greatly enhanced, and taking only the agricultural counties, where land is lowest, and the average value of land per acre (as shown by official returns) is \$15.75. What a difference! In Lowell, labour is paid the fair compensation of 80 cents per day for men, and \$2 per week for women—while in Tennessee the average compensation to labour does not exceed 50 cents per day for men, \$1.25 per week for women. Such is the value of a wise division of labour! I beg that the farmers of the country will ponder these facts, and others of like character which little investigation will disclose, but which I cannot now take time to dwell upon.

"Our great error is, we have provided no 'market on the land for the products of the land,' and our surplus produce literally sells for nothing. Corn, here, selling at 20 cents, we ship to New Orleans at a cost (for transporting, sacks, sacking, shelling, drayage, commissions, and charges) of 56 cents a sack, or 22½ cents per bushel, which makes

* See Vol. I., p. 674.

42½ cents at New Orleans equal to 20 cents at home. The actual average price in the shipping season of 1848, from 1st December to 1st April, at New Orleans, was, as nearly as I can ascertain it, 42 cents. So, nothing is made by shipping it to New Orleans. Cost of transportation and other charges in shipping from New Orleans to Liverpool, is ordinarily about 50½ cents per bushel, which, put to the cost to New Orleans, 42½ cents, makes 93 cents per bushel at Liverpool equal to 20 cents at home. In September, 1847, corn sold at Liverpool at 84 cents; in January, 1848, at 80 to 90 cents; and in December, 1848, at 69 cents per bushel. It is thus shown of what value the Liverpool market is to us. England gets our grain in bulk, but at no remunerating price to us. For the fiscal year 1848, the United States supplied food to Europe to the value of \$37,724,543, but at what prices, our money pressures will explain to those who care not to examine more definitely the prices current.

"Such is the depression in prices, that the whole exports of Tennessee do not exceed, as is believed, \$8,000,000 per annum, while the imports of foreign merchandise, as shown by official returns at the Comptroller's office, amount to about \$10,000,000 per annum. How is this annual balance against us, of probably \$2,000,000, paid? The plain answer is by bankruptcy and with specie—by deductions from the nett gains of labour—a continued, heavy, blighting drain upon the prosperity of the State. Let it not be said 'we buy too much—we must buy less.' That is an impracticable argument—we cannot correct the evil by persuading our people to 'buy less.' They will still go on to buy what their supposed necessities or their customary indulgences require. But we can contrive to pay them better for their labour, and thus enable them to buy more and still have a large surplus profit. Massachusetts has done this: she produced in 1848 from the labour of her manufacturers, (85,000 persons in 1840,) products to the value of \$52,000,000, while in the same year Tennessee produced, from the labour of her agriculturists (275,000 in 1840,) products to the value of \$40,000,000. See the difference, in the return for labour! The last year's crop of Indian corn in Tennessee is estimated at 55,000,000 bushels. At 20 cents, this is worth \$11,000,000; but had we the division of labour found in Massachusetts—had we home consumers for this home product, at 70 cents per bushel, as in Massachusetts, its worth would be \$38,500,000, a clear gain to the productive industry of the State of \$27,500,000 in the single article of Indian corn, and which alone would turn the balance of trade largely in our favour.

"The annual demand for \$10,000,000 exchange, to pay for merchandise introduced, keeps our Tennessee banks under a constant strain. Their paper is, in consequence, at an average discount at 4 per cent. in the Eastern cities, as quoted by "The Bankers' Magazine" for all 1848-9. If they fail, therefore, to supply exchange, the merchants, in self-defence, will present their paper, and draw and ship the specie to pay for goods, rather than submit to this heavy loss, which it is obvious would soon prostrate the banks. The banks are therefore forced to provide exchange, with which to supply payment for the heavy importations of merchandise—which they do at an average of about 2 per cent. discount—but they can only make exchange out of produce and miscellaneous commodities shipped abroad, and as our exports (\$8,000,000) fall short of our imports, (\$10,000,000,) there is ever a shortness of exchange and a heavy pressure upon the banks. In this single item of loss on exchange, at 2 per cent., on \$10,000,000 importations, there is a loss to the productive industry of Tennessee of \$200,000 per annum—about double the annual State tax heretofore, upon the whole taxable property of the State. This is not all. In this state of things, our State banks are only able to declare 4 per cent. dividends, and they do not always do that, while no one knows or can precisely tell what our State bank is realizing. In Massachusetts, where the exports exceed the imports, where exchange runs in their favour, the local bank paper is at par, and the banks in 1848 averaged dividends of 7¼ per cent. I select Massachusetts for comparison, because the contrast is striking. The same contrasts are furnished in other States, in proportion as there is a wise division of labour.

"And the contrasts that appear between States of the Union, may be traced more minutely between counties of the State. Compare the counties in Tennessee, where labour is divided, with the strictly agricultural counties. Compare Davidson county with Mauray—Shelby with Obion. In Obion, where the soil is ten feet deep, but where there is no division of labour, the average value of land per acre, is \$2.11. I have not time to dwell on the many details that here crowd upon the mind; but who does not perceive at a glance, that the obvious interest of the farmer is to plant by his side every class of working population which purchases and consumes his products?

"It is the policy of the legislation of the State, therefore, to encourage Domestic Manufactures and Internal Improvements; to foster the various honest handicrafts and mecha-

nic arts; to take care of the agents and of the elements of commercial prosperity; to develop the vast, but comparatively unopened, mineral resources of the State; to give liberal charters to manufacturing companies; to seek to introduce new classes of labour; additional numbers of labourers, whether in the arts, professions, or workshops, in navigation, mining, or commerce, which will aid in building up a 'market in the land for the produce of the land,' by bringing 'the plough, the loom, and the anvil' together.

"How strange it seems, then, that instead of such enlightened general policy, our State legislature has seemed to be rather characterized by a disposition to discountenance, to frown upon, to fetter, burden, and oppress, all productive classes which promise to become the customers and consumers of the farmer's produce!"—*Address of Mr. Zollieffer, of Tennessee, to his constituents.*

TO MAKE GOOD COFFEE.

FIRST procure the best coffee in the market, wash it very clean, and roast it to the colour of golden brown, but not a deeper shade, by any means. Then take the whites of three eggs to each pound of coffee, mix very carefully with the coffee while warm, and immediately transfer to earthen vessels, tying them over with bladders to render them air-tight. Take from these vessels sufficient coffee for one making only at a time; grind it, place it in a fine muslin bag, suspend it about midway in the pot, turn on the boiling water, and put on the cover to prevent the escape of steam. By this mode the coffee will be very strong, but it is best to reduce it by the addition of boiling hot milk, when it will form a most delicious beverage, very different, indeed, from that which is produced by boiling the ground coffee in water. And to be convinced of the fact, that, by the above method, which is simply infusion, all the virtues of the coffee may be obtained, it is only to take the dregs left in the bag and boil them in water for a considerable time; the result will be, a black, bitter, nauseous, feverish, woody extract, without a trace of the fine flavour of coffee, and answering to the name by which it was known on its first introduction into use, according to the account published in the eighth volume of the "Harleian Miscellany," namely, "the devil's black broth!" The making of tea is by infusion, not decoction. Who ever thinks of boiling tea?—*Farmer's Cabinet.*

Salting Hay.—We have often cautioned farmers against salting their hay too profusely. No more salt should be put on hay than animals would voluntarily consume while eating it if the salt was given to them separately. We are astonished to find, in a valuable agricultural journal, advice to add ten or twenty quarts of salt to a ton of clover or hay, which will aid in preserving it, if rather green.

The largest quantity—twenty quarts to the ton—would be about twice the amount given to a horse in a year, at the usual allowance of an ounce per day, or half a pound per week. Four quarts of salt to a ton of hay, is as much as animals commonly consume when they have their own choice. Hay is greatly injured by the use of large quantities of salt to save it, when put into the mow only partially cured; and in some cases, diseases and death among stock have been the consequences of a too liberal use of salt as a preservative.

How would a man like butter with four ounces of salt to the pound, in order to save it without the trouble of working out the buttermilk? We have been particular on this subject, as dealers inform us that much hay brought to this market is injured by over-salting, for the purpose of saving when housed too green.—*New England Farmer.*

ON THE BEST TIME TO CUT GRASS FOR HAY.

Troy, Miami County, Ohio, June 23, 1849.

THERE is one question of great importance to the farmer, in regard to which I have not been able to find any direct authority for the conclusion to which I have arrived, upon general principles. It is this:—At what period of its growth should grass be cut in order to make the best hay? Having had some grass to cut this season, I had resolved to do it at the time it should commence coming into bloom. This much settled, I began to hunt up the authorities to sustain that resolution. These I expected to find in the analysis of fodder plants, made at the different stages of their growth. But, to my surprise, no such thing was I able to find. Von Thäer, Liebig, Bousaingault, Johnston, all failed me on that point. I was the more anxious to obtain this direct proof, inasmuch as it is the almost universal opinion of the farmers here that hay should not be made until the great mass of it has matured its seed. My grass was cut, however, but not quite so early as I proposed, as the greater portion of it was in bloom. Almost every one who passed the lot asked if I was not cutting the grass too green. The answer was, generally, that I wanted to make hay of it, not straw. Public opinion, (which is no small matter now-a-days,) you see, is decidedly against me, and unless I can get some direct and positive proof to sustain me, my theory and my practice will be put down by an overwhelming majority. And probably if I had that kind of proof, it would be about the same thing, as “it’s nothing, only book farming, any how.”

I have reasoned upon the subject in this way:—As the seeds form, the stem becomes hard and woody. Why is not the straw of oats which has been cut as soon as the grain is perfected, as good fodder as timothy cut at the same period of its growth? And why is it that in order to make sugar from corn-stalks, it is necessary to pluck off the ears as soon as they begin to shoot? But it may be answered that oats and corn are different from the grasses. Not at all, in my opinion, so far as this question is concerned. Oats, if cut just before the formation of the seed, would make very good fodder, containing as much nutritive matter as hay. If, however, it were true that the principles of nutrition are most abundant in plants after the formation of the seed, then is presented the question whether it is not more advantageous to produce and gather and feed out grain and straw in the usual mode than in the form of ripe hay.

If the analysis of which I have spoken has been made, I should suppose that a more general knowledge of it would be of some benefit to the agriculturist. If it has not been done, it should be immediately undertaken by those (and the more the better) competent to the task, and the results made known.

Truly yours,

WM. J. THOMAS.

Want of time and opportunity—any thing but want of respect, or want of appreciation of the interesting nature of the question it raises—must plead our excuse for not sooner attending to the above. The *time of cutting*, and manner of curing hay, are influenced by various considerations—as, the kind of grass, the climate generally, and the particular state and promise of the weather at the time.

It is on the first point only that our correspondent seems to desire more exact information. For that, we should have turned to our favourite author, Von Thäer, but that we see his valuable work enriches the library of the writer; and moreover, that he is far from being full on the subject. We have not time, at the moment, for more extended research, and can therefore now only give what follows, as being more apposite and exact than any thing that occurs to us. It is to be regretted that the experiments here detailed relate to a grass not commonly cultivated with us, instead of timothy, (*Phleum pratense*), and others; but when we have more leisure, we will pursue the inquiry, in the hope of

finding information equally applicable to grasses more generally known, and of giving directions for curing and preserving hay generally, which may prove acceptable and useful to subscribers, whose numbers are, we are glad to announce it, increasing as fast as at any time since our (first) systematic attempt to bring "the plough, the loom, and the anvil" into close proximity.

What follows, made part of a "Government Report," published in England, in 1846.

On the whole, we believe, as we have always contended, that the reasoning of our correspondent is correct, and of course that practice should conform to it.

"*The Chemical Nature of Grass and Hay as Food for Cattle.*—By ROBERT D. THOMSON, M. D., Lecturer on Practical Chemistry in the University of Glasgow.—Grass, as may be readily imagined, varies very considerably in its composition, according to its age, and also, as may be expected, according to its species. The experiments undertaken during the present investigation have sufficiently demonstrated the first of these positions. But the second is still open for inquiry, since chemists who have previously analysed grass and hay have omitted to particularize the botanical names of the plants which they have examined. The grass used in the present experiments consisted almost entirely of rye-grass, (*Lolium perenne*), and the hay employed was also similarly constituted. The amount of solid matter in this grass varied from 18 to upwards of 30 per cent., according to the early or late period of its growth. The grass made use of in the first experiment contained from 18 to 25 per cent.; and in our calculations the latter number has been adopted. When grass first springs above the surface of the earth, the principal constituent of its early blades is water, the amount of solid matter being comparatively trifling; as it rises higher into day, the deposition of a more indurated form of carbon gradually becomes more considerable; the sugar and soluble matter, at first increasing, then gradually diminishing, to give way to the deposition of woody substance. The following table affords a view of the composition of rye-grass before and after ripening:—

	June 18.	June 23.	July 13.
Water . . .	76.19	81.23	69.00
Solid matter . .	23.81	18.77	31.00

"These are important practical facts for the agriculturist; for if, as we have endeavoured to show, the sugar is an important element of the food of animals, then it should be an object with the farmer to cut grass for the purpose of hay-making, at that period when the larger amount of matter soluble in water is contained in it. This is assuredly at an earlier period of its growth than when it has shot into seed; for it is then that woody matter predominates—a substance totally insoluble in water, and therefore less calculated to serve as food to animals than substances capable of assuming a soluble condition. This is the first point for consideration in the production of hay, since it ought to be the object of the farmer to preserve the hay for winter use in the condition most resembling the grass in its highest state of perfection. The second desideratum in hay making is to dry the grass, under such circumstances as to retain the soluble portions in perfect integrity. To ascertain whether hay, by the processes and exposure which it undergoes, loses any of its soluble constituents, the following experiments were made.*"

In a modern work, by a scientific author entitled to great respect, it is said, as to the time of cutting hay: "The period at which the crop should be cut down when it is intended for hay, is just when the plants have attained their full size. At this period they will be coming into flower, and if afterwards allowed to remain uncut for any length of time, they will be deprived of much of their juices, which are consumed in bringing the seeds to maturity, the crop becoming, at the same time, greatly more exhausting to the soil. The flowers of the plants should not, in any degree, have begun to fade before the crop is cut down."

Oil of Sunflower Seeds.—A gentleman stranger called some days since, to inquire if we could point him to information on this subject. We referred him to some in various works, but told him if we had time just then for the search, there could be found something more ample and specific in the old "American Farmer." Soon after he went out, we found such an article in the third volume, which, if we knew his name, we would inform him, can be seen at the office of "The Plough, the Loom, and the Anvil."

* These we shall give hereafter, when we have space at command.

THE SUGGESTION BY LIEUT. MAURY, OF AN INDUSTRIAL CHART.

HAS anybody ever "calculated," as we Americans say, the advantages of railroads and steamboats, in the saving of time, by enabling men to *read and write*, when they have grown old, out of the knowledge of 999 out of 1000 travellers, instead of knowing, as they once did, the half of all they meet? With a book, and pen, ink, and paper, which fortunately every man can carry in his pocket, instead of being jammed up in a coach, with nine passengers and two by the driver, besides children and bandboxes, sweltering along, covered with dust, and annoyed with blasphemous drivers, as was the case thirty years ago, making four or five miles an hour,—how great is now the contrast! Now you need not lose a minute longer than while the boat or cars are getting under way, and in that little interval you are moved to mirth or sorrow, according to your temper, in witnessing the horror of some poor fellow who arrives just—*one half-minute too late!* To stand on the wharf of this goodly city of Brotherly Love, and watch for such occasions of curious sympathy, is said to be the favourite expedient of a certain friend, whose *sombrero* is of the broad-brimmed order. Living on his money, with nothing else to do, he finds in that his most agreeable occupation! What a taste! For men, thus running to the place of departure, out of breath, "*only one minute too late,*" we never had any sympathy, unless accompanied by a woman, (God bless them all!) and then we do wish the boat or the car would put back, although there are ten chances to one their detention was caused by those numerous and nameless *little* delays which generally accompany the departure and separation of ladies, even from their most intimate friends, whom they see every day. When you hear them say "good-bye,"—"farewell,"—make up your mind to wait half an hour; for bonnets are still to be tied—shawls to be adjusted—gloves to be pulled on, and so many last words at parting, that one hardly knows when to make sure that you are fairly under way. But all this aside. What would men do without women? To return—we lately left Baltimore in a steamboat, provided for the usual emergency, of late years, of having no acquaintance to catechise or talk to; when, to our agreeable surprise, there was one of the sons of our gallant and noble old friend, Commodore Porter—a zealous contributor, by-the-by, to the old "American Farmer,"—a son whom we had known as a child, now surrounded by *his own children!*—And among the men whom we most desired to know, and were prepared to cultivate, as we would everywhere woo the spirit of useful knowledge, there was LIEUT. MAURY, the Superintendent of the National Observatory, whose scientific propensities and acquirements are so widely known. Now, reader, can you imagine what there could be fished out of such water for the benefit of the plough? You may be sure we were not long in throwing our line, with such poor skill as we possess; and what think you we brought to the surface? Why his suggestion of an

INDUSTRIAL MAP OF THE COUNTRY,

to be constructed out of the materials of the census about to be taken—a series of maps, which shall show at a glance, and with regard to every subject, all the information that the census returns can give.

In other words, instead of presenting, as he said, the census statistics in tabular form and in indigestible masses of figures, he proposes to present them to the eye on a chart, after the fashion of his wind and current charts,

by which great services have been rendered to practical navigation. These charts show at a glance to the navigator, in whatever part of the ocean he may be, the experience with regard to winds, weather, and currents, not only of each individual navigator who has been in that part of the ocean before, but the results of the combined experience of all.

It would be quite as easy to present all the statistics of the census upon a system of charts in such a manner as to show the bearings of each class of facts upon all the rest, as it is to represent all the phenomena of the winds and the waves of the sea in such a manner as to be exhibited at a single view, and comprehended at a glance.

To illustrate the plan of an industrial map such as is proposed—let us take the series of statistics which relate to the density of population, to the average of individual wealth, to the average value of lands by counties, and the like.

Take a map of the United States, and draw on it in black, a line which shall separate those portions of the country which contain more than 20 or 30 or any other number of inhabitants to the square mile, from those portions which contain less. Suppose the line of 30 inhabitants to the square mile to be thus drawn; now take 20, and by another kind of line show those belts, bands, and portions of the country which contain between 20 and 30 inhabitants to the square mile; with other lines, show the parts which contain from 10 to 20—from 5 to 10—from 3 to 5—from 1 to 3. The chart in this condition would look like a chart in which the depth of the sea for every additional 1, 2, 5, or 10 fathoms is represented by lines.

Now take the average value of land per acre by counties—separate by blue lines, drawn in like manner, the land that is worth \$20 or more per acre—and so on for every \$5, down to \$5, and then for \$4, \$3, \$2, and \$1.

Then take the average of individual wealth by counties, and represent that for every \$50—from \$400 down to \$100—in red lines.

Next take the per centum of lands that are enclosed or cultivated, and represent them for every 10 per cent. from 100 to 10 or 5, by green lines.

In like manner the per centum of the population that is engaged in agriculture, may be represented by yellow lines; the per cent of those engaged in manufactures, commerce, mining, &c., each by lines of different colours or characters, as dotted, continuous, broken, and the like. In this manner many other statistics may also be presented on the same sheet, and thus the statesman would have arranged, grouped together, and presented at one view, an amount of information and a system of facts, with their bearings upon each other, which he can acquire in no other way.

This sheet may still be extended so as to show, without the least confusion, the agricultural staples of every part of the country. Thus, represent cotton, for instance, by a leaf; sugar by a plant; hemp by a reed—all printed in green. Wheat, corn, and the cereal grains, by red, or by some other colour, or by other symbols—so with potatoes, peas, beans, hay, &c.

Now see the information that this single sheet would contain, and which any one could see at a glance, and gather in a few moments. Taking the lines indicative of individual wealth, and comparing them with the lines showing the per cent of persons engaged in agriculture, manufactures, &c., we should see the relative proportion of people that it requires to be engaged in each one of these grand divisions of labour, in order to produce the highest average of individual wealth. In other words, the chart would show us exactly how close the “plough, the loom, and the anvil” ought to be brought together; and not only that, it would show what are the most remunerating staples, and would present besides a great variety of new facts; interesting combinations, and valuable inferences.

In Professor Tucker's "Progress of the United States," page 126, will be found diagrams of this sort, confined, however, to the purpose of showing to the eye the inequality of the States in population and political power; their different rates of increase, and the comparative areas of the five great local divisions of the New England, the Middle, the Southern, the South-western, and the Western States. It will be seen to what a variety of objects of national importance Lieut. Maury would carry out and apply the same idea: and why not a chart of agricultural productions as well as of geological and meteorological facts and phenomena? May we be excused for commending the suggestion to the attention of the Board of Census, which has a great work before it, well worthy of the anxious regards of men ambitious of distinction for knowledge well directed.

THE SUGAR INTEREST.

THE profits resulting from the culture of cotton have disappeared, because the planters of the South have for twenty years insisted upon a policy that has tended to compel hundreds of thousands to fly to the West, there to become producers of food and cotton, that would gladly have remained at the East, consumers of both, and customers to the farmer and planter. Driven from cotton, the planters now try sugar, while their representatives in Congress combine for the purpose of breaking down the men who now consume food and cotton, while making cloth and iron, and thus diminish their power to consume sugar. What are the effects as now visible, and as they are likely to continue so to be, are shown in the following article, to which we invite the attention of all our readers, and not alone those of Louisiana, for the interests of the agricultural population of the Union, whether producers of corn or sugar, of cotton or wool, are one and the same:—

THE INCREASE OF IMPORTATIONS.—A thousand facts develop the unfortunate tendency of the anti-protective policy urged upon the country by Mr. Walker, and the necessity of some modification of the wild scheme which he forced upon an unwilling people. The character of the present head of the Treasury Department gives us promise that more enlarged, enlightened, and patriotic counsels will be recommended to Congress at the next session; the responsibility will rest with that Congress, and the consequences with the people.

The people, however, should be made acquainted with the facts which bear upon the question.—The men of the mine and the furnace should know that the iron—manufactured railroad iron—brought into this port by the Saranak, has been sold for \$47 per ton; imported at that price, to be carried to the vicinity of our most efficient and best-conducted furnaces. It is needless to add that the article cannot be produced in this State at such a price, without levelling the labour of freemen to that of the unfortunates who toil at the English furnaces. This is a fact for Pennsylvania. Let it be considered.

Other States have equal interests. Louisiana, if not insane, cannot hesitate to unite with Pennsylvania in favour of a proper modification of the tariff. The crevasse that pours the flood of the Mississippi through her plantations, cannot be more destructive than the operation of the tariff of 1846. We ask attention to the following table, which has been made up from official sources, and may be relied upon. It ascertains the fact that, against the storage of sugar at this port, last year, of 482 tons, there is, this year, the enormous amount of 4004 tons. If the planters of Louisiana are satisfied with this result, there is no reason which will justify discontent with us, except that, in wounding that interest, it affects all. Let our friends at the South study the facts, and judge for themselves:—

Storage of Sugars in Philadelphia, from May 15, 1848, to June 15, 1848.

576 hhd's. sugar, weighing	432 tons.
150 boxes " "	30 "
57 tierces " "	20 "
Total	482 "

Storage of Sugars from May 15 to June 15, 1849.

5950 boxes sugar, weighing	1140 tons.
3270 hhds. " "	2452 "
252 tierces " "	90 "
212 bbls. " "	22 "
3726 sacks " "	300 "
Total	4004 "

Need we tell the sugar planter what this *storage* means?—It means that there is want of consumption, and therefore it is stored away, just as the coal and the iron-ore are stored away in the coal mines and the iron banks; but if the coal-heavers and the iron-miners had full work and full pay, they and their families could consume double as much sugar as they now do: and so could the wool-grower and the cotton-grower, and the ship-builder and the house-builder, and all that depend on their labour. The policy which gives encouragement and support to *non-cultivators* of the soil, insures the best return to the labour of those who cultivate the soil; and the people—thank heaven, not sworn partisans, but *the people*—are beginning to understand this common-sense view of the matter, leaving uncommon sense for the use and behoof of the politicians.

EMERSON'S POINT.

PREMIUM FARM, TALBOT COUNTY, MARYLAND.

It would be impossible to notice in this journal, however briefly, all the numerous accounts that reach us, giving the details of proceedings at agricultural societies' exhibitions, in all parts of the country; nor is it desirable, to the exclusion of new facts, or of matter which conveys *instruction* to the mind of the reader, and either indicates or prompts him to seek useful knowledge, wherever it may be found. But *reports* like that which accompanied the award of the highest premium to *Emerson's Point Farm*, in Talbot county, commend themselves to our notice by the force of agreeable associations connected with its locality, and the old familiar names introduced into it. In truth, no report can be without value which shows to the young farmer how any man may, by intelligent, persevering, and otherwise unaided industry, begin the world on a poor farm, rear a family in comfort and respectability, and at the same time gradually enrich his land and attain to independence. At what higher goal need any honest ambition aim? What better, what more beneficent example can any man set to society in any field, than in the field restored from barrenness to fertility by his personal industry and skilful management?—thus shaming the slothful, encouraging the despondent, arresting the deserter in the act of flying from his paternal acres. Securing, in a word, by economy, diligence, and forethought, happiness and abundance for man and beast, where all had been exhaustion, poverty, and ruin! How, with the merit of such men, can we compare that of the Western farmer, who has but to plant his corn, go to sleep, and hear it crack as it grows at the rate of 100 bushels to the acre!*

Report of the Committee, on awarding the first premium to W. HAMBLETON, for management of Emerson's Point Farm.

This farm, to which the highest premium was awarded last autumn, lies near the mouth of Miles river, emptying into the Eastern branch of the

* Mr. John Laughry of Ohio, gives in Bateman's Cultivator, an account of his making 140½ bushels to the acre, on eleven acres. The New York State Agricultural Society offer their premium for the largest crop not under 80 bushels.

Chesapeake Bay, and contains 275 acres. It was purchased by the father of the present proprietor, Mr. William Hambleton, about the year 1790, at 40s. Maryland currency—or \$5.33 per acre, and was occupied by a tenant, as it had been for two or three generations, until the year 1808, when the proprietor married and settled on it.

The soil is a stiff, yellow clay—growth chiefly pine; it was worn down to the lowest state of sterility; a considerable portion had been suffered to run into pine thickets, where the corn ridges are still visible; and it was nearly destitute of the buildings indispensable to a farmer. But the means of improvement were at hand: the proprietor knew their value and lost no time in availing himself of them. He had no *capital* of any kind, but he was young, skilful, and industrious. Having no slaves, he commenced with two hired hands, and, occasionally, two boys; two horses and a yoke of oxen. The arable land was 129 acres; but his operations for many years were confined to 99 acres—a poor field of 30 acres, distant from his resources, he left idle, unenclosed. He laid off these 99 acres as follows: two fields of 45 acres each—two lots, 5 and $1\frac{1}{2}$ —orchard and garden, $2\frac{1}{2}$ acres. For his first crop, to make a push, he selected his best land, including the old tobacco ground near the house. From 45 bushels of wheat, seeded September, 1807, he got a crop of 115, less than 3 for 1. In the spring of 1808, he planted corn on one-half of his other field, after getting out a considerable quantity of bank shells and sea-ware, and left the other half, under the same enclosure, for fallow, to be manured as opportunity might permit during the summer—and this place he continued to fallow for about eight years, and would have continued it longer but for the inconvenience arising from the want of pasture. It is to be regretted that he did not keep an exact record of all his crops: however, he assures me that the following may be depended on as very near the truth.—His first crop of corn was 85 barrels—his second 35, of which 20 were short corn.—(It may be well here to mention that a barrel of corn is 5 bushels of grain, or 10 bushels of ears.) His second crop of wheat was 250 bushels from 45 of seed, being $5\frac{1}{2}$ for 1. His third crop, 350, nearly 8 for 1. Fourth, 500—fifth, 700, and so 'on, increasing every year until the year 1816, having altered the arrangement of his fields from two of 45 to three of 30 acres each, he reaped from $67\frac{1}{2}$ of seed 1000 bushels of prime wheat—one-half on corn land, the other fallow. This crop he had the good fortune to sell at \$2.91 cents per bushel, and the good sense, although not pressed, to apply the proceeds to the payment of debts necessarily contracted in the erection of buildings, among others an excellent barn, and the purchase of three or four boys; and various expenses incident to a new establishment and growing family.—It should be remarked, also, that, until the end of the year 1818, his land was burdened with a third of the estimated rent, as dower.

No memorandum can be found for the crops of the three succeeding years, nor does he recollect the amount, but they were not so great as that just stated. He failed in one crop from defective seed which he purchased. In 1820, he reaped 1127 bushels from 90 of seed, 30 of which was sown on the out-field before mentioned. This, and several other crops, to be noticed, he has on record. In 1823, his wheat crop from 72 was 1039 bushels—nearly $14\frac{1}{2}$ for 1.

In 1830, from 88 of seed, he reaped 1497 bushels of wheat, 17 for 1; one-half from corn land, the other fallow, 30 acres each: the fallow yielded 25 for 1.—See some account of this crop in "The Farmer," about July, 1830.

Last year, being much occupied in repairing and building, he seeded

only 50 bushels of wheat, which produced a crop of 628 bushels—all this was on corn land, except a lot of 5 acres, which, from $7\frac{1}{2}$ of seed gave 157 bushels—nearly 21 for 1.

I have confined myself principally to an account of his wheat crops, because he could not inform me with so much accuracy the amount of his corn crops: they were generally good, seldom falling below three barrels to the thousand, and frequently reaching four. His greatest crop of corn was in 1827, from two of his 30 acre fields, 520 barrels.

Last year he bought 5000 bushels of oyster-shells, at the cost of \$100—burnt and spread them, as far as they went, at the rate of 200 bushels per acre, just before planting corn, on the out-field, which got also a dressing of farm-yard manure. The crop of corn just gathered is fair—few in the county better. His shell-banks giving out, and the drifts of sea-ware being less abundant than formerly, about eight years ago he commenced the use of marsh and heads of creeks, of which he thinks favourably, paying strict attention to the farm-yard and compost-heaps. He has one now containing upwards of 1000 skates, or double-heads, taken a few weeks ago in his seine—from this he calculates on a thousand cart-loads of manure for his corn land next spring. From their livers he extracted 73 gallons of oil. From experiments made last year with similar oil, he is of opinion that it is a remedy against the worm so destructive to the peach tree.

For fourteen or fifteen years past, he has made use of the sickle—much of his wheat being too rank for the cradle. *He ploughs about four inches deep, and cannot be induced to go deeper*—in good land sows a bushel and a half to the acre—in poor, one bushel; breaks his fallow ground about the middle of June—cross-ploughs soon after harvest—rolls and harrows, and, if likely to be grassy, gives it a third ploughing—puts in with the plough very shoal, in narrow ridges, keeping his manure near the surface.

It will be observed that this farm, notwithstanding its rapid improvement, has been *severely cropped*—present gain, from necessity, being the main object. The proprietor was not insensible of the value of clover as an improving crop, but he could not let it remain long enough to be of much use to the land. He never cut but one field of it, 1825, upwards of 50 tons from 30 acres. Hereafter, having got his out-field in pretty good order, he will adopt the four-field system, cutting one field of clover every year. His regular force is five able hands with some small boys. He runs *three ox and two horse carts*—has never kept an overseer, and for many years laboured daily. I have not thought it necessary to state his root crops, the produce of his hog-pen, &c., supposing that his principal crops would clearly show the progress of improvement.

The above was incorporated by the Committee in their report, as an authentic, reliable statement, so far as it goes, of Mr. Hambleton's management at Emerson's Point.

The best Soup.—When 1 lb. of lean beef, free of fat, and separated from the bones, in the finely-chopped state in which it is used for beef sausages or mince-meat, is uniformly mixed with its own weight of cold water, slowly heated to boiling, and the liquid, after boiling briskly for a minute or two, is strained through a towel from the coagulated albumen and the fibrine, now become hard and horny, we obtain an equal weight of the most aromatic soup, of such strength as cannot be obtained, even by boiling for hours, from a piece of flesh. When mixed with salt and the other usual additions by which soup is usually seasoned, and tinged somewhat darker by means of roasted onions or burnt sugar, it forms the very best soup which can in any way be prepared from 1 lb. of flesh.—*Liebig.*

ON THE EFFECT OF THE CHARACTER OF A NEIGHBOURHOOD ON THE SELLING PRICE OF LANDS.

IN the preceding chapter we have given, from a judicious Committee in Talbot county, Maryland, a sketch of the farm management of the proprietor of "*Emerson's Point*," to whom they awarded the first prize some two years ago. It shows the happy results to which economy and industry will as surely lead in Maryland and Virginia, as in Rhode Island and Massachusetts; but—*not so soon* as in these States, where that disposition to *combine* individual means is to be found, which everywhere accompanies dense population, and where the good sense of the people leads them to draw the loom and the anvil close around the plough.

In these thriving Yankee States, you will find in every neighbourhood, safe, economically-managed banks, or money shops, in which almost every man has more or less invested, to be loaned to diligent and frugal men, like the proprietor of *Emerson's Point*, enabling them to reach, in ten years, the result which it took him forty to achieve. And why should industry and judgment, and *land* combined, under any well organized social and political system, not command the use of capital, to give them activity, quite as soon as, or sooner than these same moral qualities combined with an *empty ship* or a *naked house*?—as these last do, and even personal enterprise alone, without other inducement or security, where men live together in large towns? Instead of being comparatively worthless, as are the great water-powers and coal and iron mines of Maryland and Virginia, in Rhode Island they would be worth millions on millions of dollars: although, to turn them to account, they should have to bring their coal from Pennsylvania, and their cotton from Louisiana?

The part of the report to which we have referred, was taken by the committee from a verified statement in "*The American Farmer*." On their own observation and account, they go on to remark further:—

"This last statement, so far as it goes, is its own best commentary, and the committee would not cast a shade over its interest by attempting either to enlarge upon or condense it; but as the best summary of good management is, the success which has resulted from it; they here note the act, that taking into view the whole of Mr. Hambleton's acquisitions and improvements, he has, besides supporting a large family in comfort, in the course of forty years, by diligent attention to farming alone, increased his property twenty fold. In other words, he has realized an average interest of fifty per cent. on his original capital.

"It is almost superfluous to add, that they found in the general condition of his farm evidences of good management, which characterize the neighbourhood in which he lives. And although it may be said, that the present value of his estate is in a measure owing to the fact that the prices of lands around him range rather high, it should be borne in mind that inasmuch as he was one of the first, if not the very first, to commence the system of thorough manuring, which has increased both their intrinsic and their market value, his merits are only placed the more above detraction. His claims to the first premium are such that the committee need not play around the point; they unhesitatingly award it to him."

On the preceding, but a few remarks remain to be made: and first of all, the reader will note this observation: "*Owing to the fact that the prices of lands around him range rather high*." Now, does not this imply the highest compliment, when properly interpreted, that any man, or set of men, need to covet for their neighbourhood? Why "*range rather high*?" The committee did not mean that they were intrinsically better in proportion to price than other lands, but probably the contrary. What, then, is it that has raised *them* "*rather high*," if it be not the example and the benefit of association with skilful, industrious, sober, and benevolent neighbours?—and truly ought it not—does it not greatly add to, as the op-

posite state of things greatly detracts from, the intrinsic value of land in any particular vicinage? Where—to which of the two neighbourhoods would the man of capital and discretion go to buy for himself or his son—where lands “range rather high” on account of the good name of the neighbourhood, or where even better lands range rather low, on account of the residence, here and there, of drunkards, gamblers, thieves, and those who tolerate and even *speak to known* receivers of stolen goods? How often does it happen, that a whole neighbourhood is embittered by “a backbiting tongue,” or a ruffian, quarrelsome temper?—pestered with vain fools and ostentatious misers, who starve all at home for the sake of vulgar display abroad?—sometimes by “good-natured, sociable fellows,” who will neither work themselves nor let their neighbours work, and again by men who, knowing little, think they know every thing. In a word, let us add—but why add any thing?—“What have you to do,” says the cynical reader, “with the morality, any more than with the politics of agriculture?” Why, just because in dwelling on each, in its proper place, we hope to promote the practical success—to augment the happiness—and to elevate the character of those whose interests we shall espouse as long as life lasts. In a word, then, (forgetting fat hogs and fat calves for the moment,) let us add that gentlemen in the country are perhaps sometimes apt to forget how much even the selling value of their own lands may have been affected by their own character and that of their immediate neighbours, for intelligence, uprightness, and amiability, or the reverse of these qualities. We once knew a man not over-burdened, as indeed bullies rarely are, with true courage, who was never so happy as when in hot water with some of his neighbours. With a sort of instinctive love and hope of a quarrel with somebody, it mattered not whom, about something, it mattered not what, Mr. Captious would at any time leave home in the midst of a late stripping or planting season, or harvest, to go to a fish-fry or a public auction, or a neighbourhood barbecue, where true gentlemen go for social conversation, and to seek their own pleasure by contributing to the enjoyment of others. While of their neighbours such men speak only to say something good or are silent, the chief delight of Mr. Captious is to paint the best and most eminent men in the vilest colours. Now, as our religion, the little we have, leads us to cultivate peace, and to think the longest life too short for the exchange of the good offices we owe to each other, and badly as we long for a cottage and two hundred acres, on which to hatch our own chickens and trim our own vines, and so end our days, we would not accept even that *magnum bonum*, if located in the neighbourhood of Mr. Captious.

In the neighbourhood of Emerson’s Point, two sales have been made lately of farms of several hundred acres, as high as fifty and sixty dollars per acre. True, besides having at command plenty of “*pine shatters*,” they are on navigable waters, that abound in *skates* and sea-crabs, and oyster-shells and sea-ware, and then you have but to cast your line in the right place at the right time, if—you can find them, and pull up a fine sheep’s head or white perch; but—*au contraire*, is there no third-day chills and fevers?—no bile?—no jaundice?—no mosquitoes?—no galinippers?—no sand-flies? We only ask for information, and whether or not—Oh! that we had a “cabin” on that or some other “bay side” like it, with what alacrity would we go to take the chances of fish and fever, for the residue of this life of certain labour and uncertain reward! But pray we would to kind Providence to save us from becoming the terminus of steamboat “excursions,” and the advent of Mr. Captious. Alas! how easy to build castles—how more easily they melt away, leaving nothing but “the baseless fabric of a vision!”

FORM.

Previously to giving directions for the purchase of a full-grown hunter, we shall proceed to exhibit him in his highest form, although we are aware of the difficulty, on certain subjects, of conveying, clearly, an idea from our own mind to that of another. We shall, however, endeavour to make ourselves understood by describing each individual point. As to the form and shape of a hunter's head, as we do not ride upon it, it is not of much consequence, provided it be well hung on, and that is of the very highest importance, not only, as we have shown in the race-horse, on account of his respiration or wind, but unless it be so, he cannot be pleasant to ride. Not only must his jaws be wide, but when we consider that the head of a horse hangs in a slanting position from the extremity of the neck, and that the neck itself projects a considerable distance from the chest, on the muscular strength and proper formation of the neck must depend whether a horse be light or heavy in hand, and consequently pleasant or unpleasant to ride. A weak or loose neck may not be so material, as we have before observed, to the race-horse; he is generally ridden in a martingale, and in that case always; add to which, his race is soon run. Nevertheless, we like to see the neck of the race-horse rise out of the shoulder with a tapering curve, in which case he is pleasant to ride in his gallop, and, if a hard puller, his jockey has much more power over him than if his neck be loose and low. But, in a hunter, the proper position of his head is a *point of the greatest moment*, as without it his rider cannot handle him properly at his fences; and if he be not a regular star-gazer, he is always more or less dangerous to ride over a country. The proper junction of the head with the neck, and the carrying of it well or ill, depend chiefly on two particular muscles contained in the neck. The most important of these is called the splenius muscle, which constitutes the principal bulk of the neck above, and its action is sufficiently evident, namely, very powerfully to elevate the head and neck. The principal beauty of the neck, indeed, as well as the carriage of the head, depends on this muscle; and its ample development is a point the sportsman should attend to in the choice of horses that are to carry him with hounds. A certain degree of muscularity of the neck is absolutely necessary in a hunter, and it is greatly promoted by good keep in colthood; also by delaying the period of castration till the second year, which should invariably be done when the want of this muscularity is apparent in the first. It must, however, be observed, that there is a medium in this muscularity of the neck, although excess is the better extreme of the two; for when the neck of a horse appears, like that of a sheep, to rise out of the chest, and so far from being arched above, and straight below, is hollowed above, and projects below, such a horse is nearly worthless for any pleasurable purpose, as his head cannot, by any means whatever, be got into a proper place.

It has been said that a horse with a long neck will bear heavy on the hand. We do not believe that either the length of the neck, or even the bulk of the head, has any influence in causing this. They are both counterbalanced by the power of the ligament of the neck. The *setting on* of the head is most of all connected with heavy bearing on the hand; and a short-necked horse will bear heavily, because, from the thickness of the lower part of the neck consequent on its shortness, the head cannot be rightly placed. The head and neck, however, should be proportioned to each other. A short head on a long neck, or a long head on a short neck, would equally offend the eye.

Although length of neck in a hunter is not desirable, length of shoulder

is indispensable. Horses have raced well with short upright shoulders ; but it is impossible that one so formed, however good he may be in his nature, or even in his general action, can be a safe hunter, and for this reason : a hunter is constantly subject, by down-hill leaps, leaping into soft ground, and getting his fore-legs into grips, or unsound ground, to have the centre of gravity thrown forward beyond the base of his legs ; and it is more or less recoverable according to the length or shortness of his shoulder. By length of shoulder is meant obliquity of the scapula, or shoulder-bone, by which the point of the shoulder is projected forward, and which, added to the obliquity of the scapula, enables the rider to sit considerably behind, instead of nearly over the fore-legs, or pillars of support, which, on a short and upright-shouldered horse, he must do. One remark, however, must be made respecting the oblique shoulder. It is sometimes not sufficiently supplied with muscle, with which the upright shoulder generally abounds. We therefore recommend purchasers of young horses for hunters, to give the preference to what may *appear* coarse shoulders, nay, even inclined to be somewhat round, or flat on the withers, provided they are accompanied by the necessary and absolutely essential obliquity of the shoulder-bones.

The setting on of the arm, which should be strong, muscular, and long, is of much importance to a hunter. By the length of this part in the hare, as we have already observed, added to the obliquity of her shoulder, she can extend her foreparts farther than any animal of her size : in fact, she strikes nearly as far as the greyhound that pursues her, by the help of this lever. The proper position of the arm of the horse, however, is the result of an oblique shoulder. When issuing out of an upright shoulder, the elbow-joint, the centre of motion here, will be inclined inward ; the horse will be what is termed " pinned in his elbows," which causes his legs to fall powerless behind his body ; and he is seldom able to go well in deep ground. There are exceptions, but they are rare. A full and swelling fore-arm is one of the most valuable points in a horse, for whatsoever purposes he may be required ; and although we have occasionally seen hunters with light thighs carry weight well, we never have seen it so carried by horses deficient in their arms.

If sportsmen were to see the knee of the horse dissected, they would pay more attention to the form and substance of it than they generally do. It is a very complicated joint, but so beautifully constructed that it is seldom subject to internal injury. Its width and breadth, however, when considerable, are great recommendations to hunters, as admitting space for the attachment of muscles, and for the accumulation of ligamentous expansions and bands, greatly conducive to strength. Below the knee is a point on which we will not say much here, as we have already alluded to it in our remarks on the race-horse. We mean the shank, or cannon bone, and its appendages. It can scarcely be too short in a horse that has to carry a heavy man ; round legs are almost sure to fail ; those of the hunter should be flat, with the back sinews strong, detached, and well braced. This constitutes what sportsmen call a " wiry leg."

The fetlock is also a complicated joint, and very liable to injury. In a hunter it should be large and strong. But as regards his action, the pastern is still more material, and also to his standing sound. Very few horses with short pasterns can go well in deep ground, and for this obvious reason—the action of the joint is destroyed by getting below the surface of the ground, and is of course sooner immersed than when it is longer. But a greater evil than this attends a short pastern. It is the predisposing cause of navicular lameness, particularly in horses carrying weight, owing to the foot being deprived of that elasticity which a longer pastern affords, and which

consequently relieves the concussion on the foot coming to the ground in galloping and leaping, as well as on the hard road. Horses with short, and, consequently, upright pasterns, cannot be pleasant to ride, and they seldom stand many seasons' work. Excess in either should be avoided, but of the two, a hunter is less objectionable from the extreme of length, than of shortness, in this most material part.

That the foot of the hunter should be wide, is also obvious to the meanest capacity, independent of its being the form most conducive to health. The nature of the ground he has to travel over requires at times the widest base he can present to it, as a foundation for his great bulk, and thus the farmer carries out his manure upon tender land, in a broad and not a narrow-wheeled cart. Xenophon relates, that certain people of Asia were accustomed, when snow lay deep on the ground, to draw socks over the feet of their horses, to prevent them sinking in it up to their bellies; and we know why an ox sinks less in soft ground than a horse does. It is because his foot enters it expanded, by means of the division of the hoof, and when he draws it out it is contracted. The foot of the hunter, however, should not be too wide, or it may operate against his speed.

The position of the fore-legs of the hunter admits of more latitude than that of his hinder ones, or indeed of any other part of his frame. We have seen brilliant hunters standing in all positions and postures as regards their fore-legs. Some very much over the knees—that is, with the knees bent and projecting outward; many upon very twisted fetlocks, turning the toes out; and a few, though only a few, turning the toes in. In the human frame, a certain squareness in the position of the feet is consistent with strength, as we see in the statues of Hercules; but the lightness of a Mercury is indicated by the direction of the toe outwards. This is, to a certain extent, the case with the horse. Although, if measured by the standard of perfection, his toe is required to be in a direct line with the point of his shoulder, yet we have seen and heard of some of the speediest and best racers and hunters, the position of whose fore-feet have deviated considerably from this supposed essential line; but the inclination of the toe outwards is so common in horses used for these purposes, that it can scarcely be called a fault. Indeed, some persons argue, that a leg so placed affords a broader base to the superincumbent weight than when quite in a line with the shoulder—that is, provided the twist arises from the fetlock, and not from the setting on of the arm at the shoulder. Be this as it may, we are well assured that, provided the hinder-legs and quarters are good, a hunter will admit of a considerable deviation from the true line in the fore-legs, and carry his rider brilliantly. It is well known, that a much more twisted fore-legged horse could not well be seen, than the celebrated Clipper, the property of the equally celebrated Mr. Lindow, for many years said to be the most brilliant hunter in Leicestershire.

But there is one portion of the fore-quarters of the hunter to which a rule must be applied that will not admit of an exception. He must be deep in his chest or brisket—that is, from the top of the withers to the elbow. Numerous are the narrow but deep horses, in their "girth," as the term is, that have carried heavy weights, in the first style, with hounds; but no matter how wide a horse may be, if he have not depth, he cannot carry weight, and is very seldom a good-winded horse, even under a light man. One of the greatest compliments, then, that can be paid to a hunter, at first sight, is, that he appears two inches lower than he really is. Such, however, is the case with horses whose growth has been forced in their bodies by good keep when young, and thus they come under the denomination of "short-legged horses," so much esteemed by hard riders. They are like-

wise, for the most part, better leapers than such as have less growth in the body, and stand upon longer legs.

We have before observed, when speaking of the race-horse, that large bone is not required in his cannon or shank, (the part from knee to fetlock,) neither is it in the hunter. The real power of all animals is in the muscles, sinews, and tendons; and the leg best calculated to carry weight and endure to a good old age, is that in which the bone is small, but of a dense and perfect texture, and in which three convexities can be very plainly distinguished—namely, the bone; the elastic ligament behind the bone, called the sinew; and, behind that, *the flexor tendons, large, round, and strong*. The rare combination of strength with lightness is here beautifully displayed, and is one of the many instances which might be produced, to show how Nature delights to work with the least possible expense of materials.

The hunter should have length in his shoulders and quarters, and, to a certain extent, also in his back. It is true that horses with short backs carry weight best up a steep hill, which, as that is the worst method in which this animal can employ his strength, (in man it is the best,) shows that heavy men should ride short-backed horses. For hunters, however, that are ridden in our best hunting countries, which, previously to being laid down in grass, were thrown up by the plough into high ridges with deep furrows, must have *moderate* length of back, or they cannot go smoothly over such ground. Good loins, with width of haunch, (the *vis a tergo* being so necessary in leaping, as well as galloping on soft ground,) need scarcely be insisted upon; and we now proceed to the hinder-legs, the proper or improper form of which makes the difference between a good or bad hunter, if a horse with badly formed hinder-legs can be called a hunter at all. But a horse with short, straight, and weak thighs, cannot make a *good* hunter. Even admitting that they are not weak, but short and straight, yet the objection remains, because he cannot, in the latter case, be pulled together in his gallop, nor have his stride collected to enable him to take his fences properly; and, what is not generally known, he is almost certain to be a hard puller. Indeed, some good judges go so far as to assert, that horses with straight hinder-legs never have good mouths, and there is much truth in the remark, as their form will not admit of their being “pulled together,” as the horseman’s term is, in their quick paces, and without it no horse is safe. A long and muscular thigh, then, with a clean well-placed hock, is one of the most material points in a hunter, and also one by which the duration of his services may very nearly be measured; as when much out of the true form, either inclining inwards, like the cow, or outwards, like the bandy-legged man, disease is almost certain to attack this very complicated but beautifully contrived joint, when put to severe exertion, especially in soft ground. The shank-bone of the hinder-leg, below the hock, ought to be equally well supported by sinews and tendons with that of the fore-leg; and the pastern of the hind-leg should resemble that of the fore-leg, moderately long, strong, and oblique.

But such is the paramount importance of the hock in the hunter, that we transcribe the following admirable description of one most material point in it:—“The most powerful of the flexor or bending muscles are inserted into the point of the hock, or the extremity of the os calcis; and in proportion to the projection of the hock, or, in other words, the length of this bone, will two purposes be effected. The line of direction will be more advantageous, for it will be nearer to a perpendicular; and the arm of the lever to which the power is applied will be lengthened, and mechanical advantage will be gained to an almost incredible extent. Suppose this bone of the hock to be three inches in length, the joint formed by the tibia and the astragalus is

evidently the centre of motion, and the weight concentrated about the middle of the shank is the obstacle to be overcome. If the weight be four times as far from the centre of motion as the power, a force equal to four times the weight would raise it. It is, however, here to be remembered, that it is not merely the weight of the leg which is to be raised, but the weight of the horse, for the time resting upon the leg, and that weight to be propelled or driven forward. At what shall we calculate this? We may fairly suppose that the muscles, whose tendons are inserted into the point of the hock, exert an energy equal to 4000 pounds. Let us further suppose, that an inch is added to the point of the hock, which will be an addition of one-third to its length: a muscular power of less than 3000 pounds will now effect the same purpose. The slightest lengthening, therefore, of the point of the hock will make an exceedingly great difference in the muscular energy by which the joint is moved, and a difference that will wonderfully tell in a long day's work. On this account, the depth of the hock, or the length of the bone of which we are speaking, is a point of the greatest importance. There is, however, a limit to this. In proportion to the length of this bone, must be the space which it passes over, in order sufficiently to bend the limb; and in that proportion must be the contraction of the muscle, and consequently the length of the muscle, that it may be enabled thus to contract; and, therefore, if this bone were inordinately lengthened, there would require a depth of quarter which would amount to deformity. A hock of this advantageous length is, however, rarely or never met with, and it is received among the golden rules in judging of the horse, that this bone of the hock cannot be too long."*

Hunters which carry very heavy men cannot excel in the field, unless they exhibit those just proportions in their limbs, and all the moving levers, necessary to produce full liberty of action, but not too long a stride. Well placed hinder-legs, with wide hips, well spread gaskins, and great depth of chest, are essentials, together with as much of the *vis a tergo* as is consistent with a not unsightly back, commonly called "a hog back." Well knit joints, short cannon bone, moderately oblique pasterns, with rather large feet, are not only points from which great physical powers may be expected, but they are necessary to the duration of them in the horse we are now alluding to. As, however, it is an axiom in the animal creation, that the parts which add to strength diminish swiftness, hunters to carry more than sixteen stones† well with hounds, at the pace they now run, are always difficult to be procured, and ought to command large prices. The stamp of animal most approved of for this purpose, is the short-legged, thick, but well-bred horse, not exceeding sixteen hands in height, but appearing, to the eye, half a hand below that standard. As for his general appearance, it is "handsome is, that handsome does," in this case; and we must not look for beauty in all his points.

Having now described each individual external part of the horse essential to his being a good hunter, we shall, in a few words, exhibit him to the reader's view in what we consider his best form. He should have a light head, well put on, with a firm, but not a long neck; lengthy, and consequently oblique, shoulders, with very capacious chest, and great depth of girth; a long, muscular fore-arm, coming well out at the shoulder, the elbow parallel with the body, neither inclining inward nor outward; a short cannon or shank, with large tendons and sinews, forming a flat, not round leg;

* *Library of Useful Knowledge, Farmers' Series, "The Horse,"* p. 272.

† 224 pounds: 14 pounds to the stone.

an oblique pastern, rather long than short, and an open circular foot; the back of moderate length, with well-developed loins and fillets, and deep ribs, making what is termed by sportsmen a good "spur-place." From the loins to the setting on of the tail, the line should be carried on almost straight, or rounded only in a very slight degree. Thus the haunch will be most oblique, and will produce a corresponding obliquity in the thigh bone, which formation is peculiarly characteristic of the well-bred horse. The dock of the tail should be large, the buttocks close together, and the fundament small, and somewhat resembling the front or eye of a pippin apple. The thighs should be muscular and long, rather inclining inwards, with large, lean hocks, the points appearing to stand somewhat behind the body, which will bring the lower part of the hind-leg, or shank, under it. The shank, fetlock, and pastern of the hinder-leg, should exactly resemble those of the fore-leg, as also should the foot. The legs should appear short, from the great depth of chest, and well-proportioned substance of the body, or middle-piece.

SIZE.

The stature of the horse is no more absolutely fixed than that of the human body, but a medium height is considered as best for a hunter, say fifteen hands, two or three inches. For one good horse over this height, there are a hundred under it. In fact, there are, in the operations of nature as well as of art, limits which they cannot surpass in magnitude, and it is known that no very large animal has strength in proportion to its size. That the horse has not, the pony affords proof, if any other were wanting. Even the heaviest weights find horses about the height we have fixed upon best calculated to carry them. There have been many extraordinary instances of horses, little more than fourteen hands high, being equal to the speed of hounds over the strongest counties in England. For example, Mr. William Coke's "Pony," as he was called, many years celebrated in Leicestershire; but they are not pleasant to ride, by reason of the fences, when high, appearing higher to the rider than when he is mounted on a taller horse.

MOUTH.

Temper and mouth are essential points in a hunter. The former adds much to his value, not only as it contributes to the pleasure and safety of his rider, but a horse of a placid temper saves himself much in a long day's work with hounds, and especially when there is much leaping. Indeed, fretful horses are proverbially soft, and not generally to be depended upon at a pinch, which caused Shakspeare to make them the symbol of false friends. Thus Julius Cæsar exclaims:

"Hollow men, like horses, hot at hand,
Make gallant show, and *promise* of their mettle;
But when they should endure the bloody spur,
They fall their crest, and, like deceitful jades,
Sink in the trial."

A hunter should have courage, but nothing more, to make him what he is required to be, namely, not afraid to leap at any fence his rider thinks proper to put him at. His mouth will depend upon two things: first, upon the judgment of the person who breaks him in, in his colthood; and, secondly, upon the position of his hinder-legs; but chiefly upon the first. It ought to be endowed with so great sensibility, that the slightest motion of the bit should give him warning, and direct his course, which is signifi-

cantly implied by Horace, when he said, "the ear of a horse lies in his bridle." It is true, that what we call the "mouth" of a horse, is an artificial feature, at all events, a figurative term for his being easily acted upon by the bridle; but it is a point of the utmost importance in a hunter. Without it, in short, he is absolutely dangerous to ride; for although the skill and power of his rider may prevent his running away, yet he is always in danger of being placed in some unpleasant situation or other by him. In the first place, he cannot be a large fencer, nor safe at all sorts of leaps, if he will not suffer his rider to pull him together, to collect him for the effort of rising at them. Secondly, he is as dangerous in going through gates, only partly opened. Thirdly, if the horse immediately before him should fall at a leap, he is very apt to leap upon him or his rider; and lastly, his strength is sooner exhausted than that of a horse, perhaps not naturally so good, which is going quietly, and within himself, by his side.

No doubt many of the ancient writers were good judges of horses, although they were deficient, compared with the moderns, in availing themselves of their highest capabilities. Were a purchaser of a hunter to look no further than the first chapter of Xenophon *περὶ ἵππων*, he would find hints that would be well worthy his attention; and nothing can be more expressive of the evils attending a bad mouth in a horse of this description, than the following sentence from Pliny: "Equi sine frænīs deformis ipse cursus, rigida cervice, et extento capite, currentium," which may be thus translated: The career of a horse without a bridle is disagreeable, carrying his neck stiff, and his nose in the air. When we consider how often it is necessary to pull up, or to turn a horse very short in crossing enclosed countries, the value, even on the score of comfort, of a good mouth, cannot be too highly appreciated by the sportsman.

ACTION.

We now come to the action of the hunter, which, after all, is the main consideration. He should have energy in all his paces, but he may have too much of what is generally called action. Nothing conveys to us a better idea of that which is adapted to his business, than the concluding sentence of a huntsman of former days, when describing to his master a capital run with his hounds. "The old mare," said he, "*carried me like oil.*" The action of the hunter should be *smooth*, or it will not last. His stride in his gallop should be rather long than otherwise, provided he brings his hinder-legs well under his body; and the movement of the fore-legs should be round, but by no means high. Above all things, there should be no "*dwelling*," as it is called, in the limb coming to the ground; a great obstacle to speed, but often the accompaniment of excessive action in the fore-legs. But the test of action in the hunter, is in what sportsmen call "*dirt*," that is, in soft, tender ground, or when passing over such as appears dry on the surface, but is not sufficiently so to bear his weight. It is not exactly in the power of the best judges to determine whence this peculiar excellence, which some horses possess over others apparently well-proportioned, arises, for which reason the eye should never be depended upon in the selection of horses for the field. Wisdom here can only be the produce of experience; and many sportsmen have paid dear for it on this particular point. In fact, next to ascending steep hills under great weight, nothing puts the physical powers of a horse to so severe a test, as carrying a heavy man, at a quick rate, over a country that sinks under him at every step. Mere strength alone will not do it. It must be the result of a combination of strength with agility, good wind and speed, to produce which, the most

perfect arrangement of the acting parts—although the exact symmetry and proportion of them may not be exactly discernible to the eye—are requisite, and, we may be assured, are present. As the beauty of all forms is, in great part, subordinate to their utility, a horse of this description, that is, one which can carry sixteen stones well up to hounds in any or in all countries, at the rate they now run, not only, as has before been observed, commands a very high price, but, to a person who lives to study nature, presents a feast to the eye.

A hunter should be what is called very quick as well as very fast; by which is implied, that he should not only have great speed, but that he should be very quick in regaining his speed after taking his leap, or being pulled up from any other cause. One so gifted will cross a country, especially a close one, in less time than one that is more speedy, but not so “quick on his legs,” as jockies term it. It is also very agreeable that a hunter should be safe in his slow paces on the road; and, if a fast trotter, he relieves himself by changing the action of the muscles, when the pace of hounds so far abates as to allow him to break into a trot.

LEAPING.

One of the greatest accomplishments in a hunter is being a perfect and safe leaper. The situation of a sportsman riding a horse that is “uncertain,” as the term is, at his fences, may be compared with that of the philosopher, which Cicero describes in his Tusculan Questions, as seated on the throne of Dionysius, gazing upon the wealth and splendour that surrounded him, with a naked sword suspended over his head by a single thread. But a horse following hounds often leaps under very great disadvantages, which accounts for the numerous falls sportsmen get. Putting aside the labour of rising from the ground, which, to the horse, with a weight on his back, must be great, from the earth’s attraction and the body’s gravity, he has often to take his spring without any fixed point for support; whereas, in most other cases, leaping takes place on a fixed surface, which possesses the power of resistance in consequence of its firmness. Nevertheless, although the surface yield to a certain degree, leaping can still be performed, notwithstanding the retrograde motion of the surface produces a great diminution in the velocity of the leap, compared with that which is made from firm ground; and the velocity is always greater in proportion as the resistance is perfect. Thus it is, that we find horses able to cover much greater obstacles in Leicestershire, and the other grass countries, where the taking off for the leap is generally good and sound, than they can cover in ploughed and marshy districts, where they have not that advantage, from the less firm state of the soil. We shall now endeavour to point out the form most likely to constitute a good leaper.

The very worm that crawls on the ground first carries its contraction from the hinder parts, in order to throw its fore parts forward; and it is chiefly from the *vis a tergo*, or strength of back, and hinder quarters, that the power of leaping in a horse is derived. It must, however, be admitted that oblique shoulders give him a great advantage, by enabling him to extend his fore quarters; but if his loins be loose and weak, and his hinder-legs ill-placed, with weak hocks, he cannot make, in any one’s hands, a safe and perfect leaper. But the position of his head has something to do with it. A plank placed in equilibrio cannot rise at one end unless it sinks at the other; and although a horse in light harness cannot, for appearance’ sake, carry his head too high, provided he be obedient to the rein, the hunter should carry his low. A colt, running wild, never raises his head when he leaps, but

lowers it, and so should the hunter; and he is always less liable to fall in galloping over a country when he carries his head low; likewise, in horses with lengthy shoulders, the seat of the rider is rather benefited than injured by it.

The sort of fence that stops hunters more than any other description of obstacle, is a wide brook; and like all other wide places, it takes a good deal out of him, if he clears it. Lengthy horses are the best brook jumpers; but they require good loins and hinder quarters as well, and, above all things, *courage*. Unless a horse takes a wide brook in his stroke, he is almost sure to be in it; for which reason he is generally ridden fast at it, and, for the most part, not allowed to see it till he comes close to it. Immense space has been covered by horses when jumping brooks, particularly when there has been a difference of elevation of the banks in favour of the horse. We have heard of thirty feet and upwards from hind foot to hind foot; but half that space *in water* is considered a good brook, and even if the banks are sound, stops a great part of the field. When unsound, it requires a horse, coming under the denomination of a "good brook-jumper," to clear it without a fall, and particularly if towards the end of a run.

To be a good timber leaper is a great desideratum in a hunter, although many horses are great timber leapers, and yet from their form, never make good hunters. It only requires a short-backed, truss-horse for this purpose; and he can dispense with the general length so necessary to the complete hunter. Good and well-formed thighs, however, are necessary. For those hunting countries, such as Cheshire, where the hedge is generally placed on a bank or "cop," as it is there styled, rather a short but very active horse performs best. But he must be very good in his hinder-legs, and very quick in the use of them. Wall jumpers come within the same class with timber jumpers as to make and shape.

There is one faculty in which the horse is wanting, that would, if he possessed it, give him a great advantage in leaping. In the human species, the power and influence of feeling are inherent, in a great degree, to the very tips of the fingers; but the horse has no proper organ of feeling or *touch*. When a man takes his spring for a leap, or leaps on the top of any substance, he has a distinct and certain sense or knowledge of the nature of the ground from which he has sprung, and of the substance on which he has alighted; but, from the insensible nature of the horse's hoof, such feeling is, in a great measure, denied to him, and indispensably so too. Still, however, there are a few instances upon record of horses going very well over a country even after having undergone the operation of neurotomy, by which all sensibility, from the fetlock downwards, has been destroyed.*

* An operation introduced by Moorecroft. It consists in the excision of a portion of the nerves going to the inner and outer metacarpals. See Skinner's edition of "Youatt on the Horse."—*Ed. P. L. & A.*

Longest Races ever run in the United States.—The two longest races ever run in the United States, were won by a Medley and a descendant of Clockfast. One race was forty-four miles, heats twenty-two miles each; and the other thirty-two miles—one heat seventeen, and the next fifteen miles. In both cases they were ridden by gentlemen. D.

ON THE COST OF PRODUCING WHEAT AND INDIAN CORN IN THE STATE OF NEW YORK.

[From the Patent Office Report of 1847.]

Binghampton, N. Y., October 16, 1837.

HON. D. S. DICKENSON—*Dear Sir*:—I will give you the result of my experience and observation respecting the cost of producing crops of wheat and Indian corn, in this vicinity.

I estimate the value of our wheat lands, in a good state for a crop, at twenty dollars per acre.

Interest on this at 6 per cent.	\$1-20
Three ploughings	4-50
Harrowing thoroughly	2-25
One and a half bushels of seed, and sowing	1-68
Harvesting with a cradle	1-00
Threshing and cleaning	2-00
	\$12-63

I estimate the average yield on good land, well tilled, at twenty bushels per acre, making the cost sixty-three cents and a fraction per bushel.

I have made no account of the value of the straw, or of gathering the crop into the barn, or of tending it while growing, because in stating the value of the land I suppose it to be well fenced, and that the crop will cost nothing in tending, and the straw for cattle fodder and for making manure, is worth more than barn room, cartage from the field, &c.

The average crop, agreeably to my statement, may be greater than the yield of many fields, half tilled, and sown at an unseasonable time, but I am confident that I have not *overrated* the production, on an average, of good farms in this county, which receive the culture which I have contemplated in my estimate of expense.

Our corn land I would call worth twenty-five dollars per acre.

Interest on which is	\$1-60
Once ploughing with double team	2-00
Harrowing	1-50
Seed and planting	1-00
Plaster and putting on the hill	37
Ploughing and hoeing twice	2-00
Cutting by the roots and stacking	75
Husking and threshing	2-50
	\$11-62

Average yield, forty bushels. Cost of production, twenty-nine cents.*

In this amount I have put down nothing for manuring or hauling, because the fodder obtained from this crop, being cut up when the kernel begins to harden, in the way now universally adopted here, and carefully saved, is *worth as much as a moderate crop of hay made from the same quantity of land; and produces as much manure as is needed for future crops.*†

Perhaps I ought to explain the fact that it costs less to prepare ground for corn than for wheat. The most approved mode of raising a corn crop is, to plant on sward ground, ploughing it but once and turning the upper side perfectly under—then harrowing lengthwise until a good tilth is pro-

* Double as much as it is worth in many parts of the Western country.

† And yet in our census there has never been any account taken of corn fodder!

duced. When the soil is not rich enough, stable manure is first spread on the land.

I would also explain my putting the value of corn land, higher than wheat land, by remarking that our river bottom, and the adjacent grounds, are the best for corn, and are more valued, though back and more elevated land produce more and better wheat, being less liable to rust and shrinking.

Very respectfully, your friend,

A. DOUBLEDAY.

INTERESTING AGRICULTURAL EXPERIMENTS.

SOME recent experiments in wheat and flour go to prove that both contain water, and that the quantity is more in cold countries than in warm. In Alsace, from 16 to 20 per cent. In England, from 14 to 17 per cent. In the United States, from 12 to 14 per cent. In Africa and Sicily, from 9 to 11 per cent. This accounts for the fact that the same weight of Southern flour yields more bread than the Northern. English wheat yields 13 pounds more to the quarter than the Scotch. Alabama flour, it is said, yields 20 per cent. more than Cincinnati. And in general, American flour, according to the authority of one of the most extensive London bakers, absorbs 8 or 10 per cent. more of its own weight of water in being made into bread than the English. The warmer the country the more is the water dried out of the grain before it ripens, and hence when made into bread, it absorbs more water again, and is therefore more valuable. Professor Beck has written a report for the Patent Office, in which he shows that the presence of water unfits these articles for preservation. The books of a single inspector in New York city showed that in 1847 he inspected 218,679 barrels sour and musty flour. In his opinion the loss on these was \$250,000. Every year the total loss in the United States from moisture in wheat and flour is estimated at from \$3,000,000 to \$5,000,000! To remedy this great evil, the grain should be well ripened before harvesting, and well dried before being stored in a good dry granary. Kiln drying is preferable. The mode of ascertaining the amount of water is this.—Take a small sample, say five ounces, and weigh it carefully. Put it in a dry vessel, which should be heated by boiling water. After six or seven hours weigh it carefully, until it loses no more weight. Its loss of weight shows the original amount of water.

Sweet Potato Seed from the Bloom.—The undersigned has raised for three years past, sweet potatoes, of better quality than usual, in the following way, viz.:

The yam potato vine blooms in August; in about a month thereafter they form a pod; the seed are then formed of about the size of sage seed, and of the same colour. The pod should be noticed and gathered when ripe, or else they will soon drop. In the spring, at the usual time of sowing seed, I sow them in the same way I sow cabbage seed. They will not come up quite as soon, but will continue doing so through the spring. The plant is small and delicate in appearance, and should be drawn in a wet season, with a little dirt attached to it, and transplanted. The leaf and vine have a different appearance from the potato usually, and the potato will be found to grow larger and smoother than usual.

I prefer this method, after satisfactory practice, to raise the potato, to any other whatever.

COLLIN WOOD.

A MODEL PLANTATION.

[From the Charleston Mercury.]

WITH NOTES, BY THE EDITOR OF "THE PLOUGH, THE LOOM, AND THE ANVIL."

A WRITER in the Charleston Mercury, having just visited Millwood, the plantation of Col. Hampton, near Columbia, S. C., in describing it, says :—

Col. Hampton has for many years past been much interested in improving the breed of horned cattle in our country; and has from time to time, at a great pecuniary expense, introduced from abroad the various improved breeds. These he has liberally distributed through the country; and in my occasional travels, whenever I have seen an extraordinary milch cow, I was not long in ascertaining the origin. The expense of feeding a fine cow, yielding twenty or more quarts of milk, is not greater than that of our low country cows, giving, after they are tamed, five or six quarts.*

I observed in Hampton's herd, a bull of four years old, that possessed all the points of a perfect animal of the kind. I doubt whether he can be surpassed in America.† I also examined one of two twin cows, which I was informed unitedly gave sixty-one quarts of milk per day.‡

Good milch cows cannot be profitable without a convenient dairy, to which an industrious and cleanly dairy maid is essential. The improvements I observed in this department were highly commendable. The milk-pans, instead of being of wood or stoneware, were *all of glass*,§ which impart no taste to the milk or butter. The pans were protected from the flies with frames covered by gauze; the dairy maid was a pattern of cleanliness and neatness; the house was cool, airy, and in neatness rivalling a Holland parlour. Such a sight would give an additional relish to the milk and butter.

The flock of sheep, which I judge from observation to be between five and six hundred, was almost wholly composed of the Bakewell breed. These sheep were in fine order, with a good carcase, and a rich fleece, intermediate in texture between the long-woolled and the Merino sheep; the average weight of wool in the whole flock will, I think, be between five and

* Neither will give much milk without being well fed, any more than you can get meal from a hopper, but by putting in grain; though out of a given quantity of food, some will grind more milk—some more fat. It is a fact well attested, lately, in France, that a man, in five years, has very *nearly doubled* the produce of his cheese dairy from twenty-five cows, by close attention, in the selection of them, to the *marks laid down by Guenon*. He has no doubt of quite doubling it in another year. We shall give the particulars.—*Ed. P. L. & A.*

† Doubtless this is the bull Mr. Summer bought for him of Mr. Vail, of Troy, some years since—a *red short-horn*, in pursuance of Col. Hampton's partiality for that colour.—*Ed. P. L. & A.*

‡ We once knew a cow, scarcely of middle size, thin skin, fine hair, and blood-looking, but called a "country cow," from Adams county, Pennsylvania, bought out of a drove, by Mr. Gregg, of Baltimore, which gave thirty-two quarts in a day.—*Ed. P. L. & A.*

§ This is like Hampton—not to *talk* about the matter, but to *do it*!—Years ago we called attention to this obvious improvement in the milk-pan, and begged the American Institute to import them. In Belgium they were used in the large dairies. The dairy maid there attends to eighteen cows, and makes money on an allowance of a dollar a year extra for *pan money*, paying for what she breaks. We have had a specimen of Boston-made glass milk-pans sent to our office, and, if we could remember the name of the manufacturer, would give it.—These are railroad and steamboat notes we are now making. Quere—for we forget—is Col. Hampton's a spring-house or a cellar? In Pennsylvania, the best of butter-makers—or rather makers of the best butter—owing probably to the grass, are discarding spring-houses for cool, well-ventilated cellars.—*Ed. P. L. & A.*

six pounds per head. There are, however, some individuals producing some extraordinary fine and heavy fleeces. I was present at the weighing of the fleece of a ewe seventeen months old, presented by Col. H. to Dr. Parker, of Columbia, and kept in the vicinity of the asylum, which weighed sixteen pounds. The fleece, although not washed, was tolerably clean. Deducting one-fifth for waste, which is the usual allowance with the Saxon fleece wool, we would have nearly thirteen pounds of pure wool, which I am not aware has ever been equalled in any country in this variety of sheep. The average fleece of England, as far as my memory serves me, is four pounds eight ounces per head, viz.: short wool, three pounds four ounces; long wool, seven pounds ten ounces. From the experiment of Col. Hampton with the Bakewell sheep, continued for many years, I feel confident that this variety of sheep is best adapted to our pasturage and climate. The wool is fully as fine as that of the same sheep in England—selling at twenty cents per pound, while that of the Merino or Saxon brings seventy-five cents; the difference of price, however, will be made up in the greater quantity of wool, and the heavier and fatter carcase of the Bakewell sheep. The mutton, as not only myself, but hundreds of others, can attest, is not surpassed by that of the mountains of Virginia, or that of the far-famed black-faced sheep of the hills of Scotland.*

Our whole State, between Columbia and Charleston, *is well adapted to the raising of sheep*. Our greatest enemies are the dogs. To avoid this annoyance, Col. Hampton has a shepherd, whose business it is to attend to the sheep and cattle during the day, and to pen them at night. He possesses another important desideratum in a pair of shepherd dogs, imported from Scotland, that appear well adapted to our climate, and they exhibit all the sagacity and activity of the shepherd's dog of Europe—bringing up not only the sheep but cattle, circling round the stragglers, and are of as much use in herding the flocks as twice the number of men. The larger varieties of the shepherd's dog, that is in common use on the Swiss Alps, would probably be still more useful than the shepherd's dog of Scotland; inasmuch as they remain with the sheep and goats all night, even in the absence of the shepherd; and not only give battle to the wolf, but destroy every cur that approaches the flock.†

The poultry establishment is ingenious and ornamental. It appears, however, to have been constructed too closely after the plan of similar establishments in England and colder climates. A disease like the cholera, for which no remedy has as yet been found, has attacked and destroyed the poultry. A more open and airy situation, the various buildings further removed from each other, with shade trees, leaves, and shrubbery, where the

* It is to be presumed that the fleece in this case was the first clip, and therefore as old as the sheep.—How much will she shear next, at the end of a year?—Will Dr. P. note? That Col. H. kills fat mutton direct from his *pastures*, at all seasons, without the aid of grain, which his sheep never smell, is well known by all who have the pleasure to get their knees under his mahogany—a pleasure, when once enjoyed, not to be forgotten.—*Ed. P. L. & A.*

† We were lately told by the Hon. Mr. Marsh, of Vermont—a gentleman of large possessions as well as of very enlarged mind—that he had found that he could not carry his sheep through the year for less than (we think he said) from \$1.10 to \$1.30 a head. We doubt if the snow ever covers Col. Hampton's fields long enough to admit of his sheep being fed with corn-blades even; and as for grain, they'd turn away and look sheepish, in ignorance of what it meant. Our flocks of sheep must finally travel southward, and the loom will follow them. It ought to precede, and the sheep will be sure to gather around it. Supply will follow demand. In regard to the absence of the larger Alpine wolf-dog, we hope it will not be long before we have the pleasure to fill that gap.—*Ed. P. L. & A.*

poultry could scratch and find insects, grasses, &c., is best adapted to our climate.*

I observed that the lawn in front of the mansion was planted with the American or wild canary grass, (*Phalaris Americana*.) It is perennial, of a dark green colour, and is decidedly the most ornamental grass for lawns and borders of gardens that has as yet been cultivated in our country. The original plants were obtained from James Rose, Esq., whose garden has, for many years been ornamented by it.

Col. Hampton has been equally successful in cultivating a grass for hay—the native rice-grass of our State, (*Leersia Oryzoides*.) It grows only in wet situations, and succeeds best where it is partially overflowed by water. He has converted some of his low lands into a meadow, where the rice-grass is cultivated, and produces immense crops of the finest hay. This grass, however, to produce hay in perfection, should be mowed before it is ripe; as, like timothy and clover, its value is lessened as the stalks grow hard. It should be cut twice at least in summer; and I have no hesitation in saying that it will produce a more abundant crop of the very best hay that can be cultivated in any country.†

I observed another improvement at the plantation of Col. Hampton, in the capacious cisterns which had been built in the vicinity of his negro houses, affording at all times the purest and most wholesome water for his domestics. In order to be profitable and useful to the planter, his labourers must be well clothed and fed, and above all, they must, in order to be healthy, be supplied with wholesome water. Had the latter fact been well understood by planters, hundreds of lives might have been prolonged. The removal of negro settlements from a locality where the water was impure, to the vicinity of pure water, has been found to be a preventive of many diseases, and has added greatly to the population of a plantation.‡

I have no hesitation in saying that Col. Hampton has, by his importation

* We hardly know how to account for it; but we have never known one of those costly poultry establishments, built without regard to expense, by gentlemen, that succeeded. If you want to make sure of eggs and chickens, settle an old negro woman in the woods, drive her down two forks, and throw a ridge-pole in the crotch of them; give her as many fence-rails as will build her a hen-house, cover it with shavings and sods, and give her a blood-red or a dominica cock, and eight hens, and let her have the run of your mill or corn-house—and she will supply you with what you want. Col. Hampton has sometimes bought from his own negroes, as many as five hundred chickens in a season: some of them, perhaps, more than once!—*Ed. P. L. & A.*

† Would the Colonel or Mr. Rose be so good as to send us some seed of these grasses this autumn, if to be conveniently saved? Our friend Bacot, of the Charleston Post-office, or the chief thereof, unexcelled as men and officers, whatever their politics, will either of them forward them to the *Ed. P. L. & A.*?

‡ There are two things greatly neglected, which must, sooner or later, be generally practised with great advantage and economy: one is the more general construction of cisterns, to be filled from the roofs of houses, and thus, when filtered and iced, an abundant supply will be secured, at all times easily accessible, and making the purest and the best drinking water. The other is the procurement, in thousands of situations, of streams of flowing water, to be had at your kitchen door or barn door, by boring. We have long been surprised that some *peripatetic* mechanic has not started through the country with his *boring apparatus*! How much more useful would it be, than the boring which is practised in a certain great body that all of us wot of.

In Fond du Lac, Wisconsin, says a Western paper, they have bored to about 150 feet only and found a good supply of water. The water is of a beautiful soft quality—sometimes a little impregnated with sulphur—and is delivered at the surface or as much above within 39 feet as is desired. The cost is comparatively small. Contractors deliver it at the surface, finding every thing, for \$100. The boring is done by two men with entire ease, whatever may be the depth. A slight stratum of rock, commonly not over three feet, is passed. This is worked through with a drill, to which a cable-rope instead of

and liberal distribution of the various breeds of domestic animals, the introduction of many useful productions of grasses and grains, and the humane and skilful management of his plantation, fully merited the title of a benefactor of our Southern country.*

CONDITION OF LANDED PROPRIETORS IN IRELAND.

ANOTHER remarkable instance of the almost insurmountable difficulties which beset the path of some Irish landlords, is forcibly illustrated in a letter addressed to Lord John Russell, by Mr. William Leader, of Ransalee, in the Union of Kanturk, and county of Cork. This gentleman, it appears, is a landlord in fee, cultivating, with the aid of an experienced Scotch agriculturist, a farm of manageable extent and superior quality, consisting of two hundred and forty arable Irish acres, exclusive of forty acres of young wood. The ground is in the highest state of cultivation, and yet he says he has not derived one shilling of income from it for the last year, all being swallowed up in the following rates and taxes :

Two county rates,	£39	15	10
Poor rates, made 27th November, 1847, at 3s.	51	9	0
“ made 18th March, 1848, at 6s.	102	18	0
“ made 26th September, 1848, at 2s. 6d.	42	17	6
Quit rent,	2	18	9
Road rate of 2½d. per lb.	4	11	5½
Tithes,	6	0	0
In all,	250	10	6½

Or, £1 0s. 10½d. an acre.

Mr. Leader thus continues his statement :

“ In the above calculation I have not included £45 poor rate paid for a bolting-mill on this land—a species of property free trade has rendered all but valueless ; and, if added, it would raise the rates to £1, 5s. 5½d. an acre. Owing to the failure of the wheat crop, and the low prices of cattle, and every other agricultural commodity, I did not make this rent off my land, and I am now at a positive loss. Thus, my lord, you may perceive that it does not require an encumbered estate to ruin its owner in Ireland. A fee simple, unincumbered, well cultivated one, as mine, without a pauper on it, can, under the present laws, effectually do it.”

rods is attached. The bore is lined throughout with sheet-iron pipe, which follows the drill as fast as it proceeds.—*Ed. P. L. & A.*

* The arrangements for care of the negro children, and attention to the aged, the sick, and the infirm, are truly admirable. Every provision is made that forecast and experience can suggest and benevolence supply, in the way of nurses, dietary, hospitals, and the prompt attendance of experienced physicians in critical cases—and this, though carried to great perfection at Millwood, is general in the South. Nothing seemed to strike Mr. Robinson—the celebrated agricultural writer for “The New York American Agriculturist,”—more emphatically than the kindness of Southern masters to their slaves, and their ample and even generous allowance of food and clothing. Speaking of the plantation of Col. Preston, on the Mississippi—the brother-in-law of Col. Hampton—he says :—

“ I counted in one ‘quarter,’ (the name given to the negro houses,) upwards of thirty double cabins, all neatly whitewashed frame houses, with brick chimneys, built in regular order upon both sides of a wide street, and which, it is the law, must be kept in a perfect state of cleanliness. Feeding the force on this place is not quite equal to feeding an army, but it takes nine barrels of pork every week, which, at an average of \$10, is \$4680 per annum, cash out, for that item alone. The regular allowance of pork to all field hands, is four pounds, clear of bone, per week, with as much corn meal as they can eat, besides molasses, sweet potatoes, vegetables, and occasional extras of fresh beef and mutton. Children’s rations, 1½ pounds of pork per week, and full supply of other things.”

[Entered according to Act of Congress, in the year 1849, by JOHN S. SKINNER & SON, in the Clerk's Office of the District Court of the Eastern District of Pennsylvania.]

THE AGRICULTURAL SCHOOL-BOOK.

ROADS.

FIRST LESSON.

THERE are few things that indicate more truly the degree of prosperity in a district or neighbourhood than the condition of its public roads. There is no greater labour-saving invention than that of good roads, and among those that are in existence, the difference as to ease, rapidity, and economy of transportation, caused by the various degrees of skill and labour bestowed upon them, is much greater than is usually imagined, particularly by farmers, whom they most concern.

One important difference lies in the grades, or longitudinal slopes of a road. Suppose that a road rises a hundred feet in the distance of two thousand feet. The ascending slope is then one in twenty: that is, in advancing twenty feet, you rise one foot; and, as it can be proved, one-twentieth of the entire load drawn over it in one direction must actually be *lifted up* this entire height of one hundred feet. But upon such a slope a horse can only draw *one-half* as much as he can upon a level road, and two horses will be needed on such a road to do the usual work of one. If the road is skilfully constructed, and made level, by going round hills instead of over them, there will be a saving of one-half of the former expense of carriage on it.

Another great difference in roads lies in the nature of their *surfaces*; one being hard and smooth, the other soft and uneven. On a well-made road of broken stone, a horse can draw *three times* as much as he can upon a gravel road. By making, then, such a road as the former in the place of the latter, the expenses of transportation will be reduced one-third of their former amount. So that two-thirds will be completely saved, and two out of three of all the horses formerly employed can then be dispensed with.

If such an improvement can be made for a sum of money, the interest of which will be less than the total amount of the annual saving of labour, it will be true economy to make it, however great the original outlay; for the decision of all such questions depends on considerations of comparative profit.

The profits of such improvements are not confined to the proprietors of a road, (whether towns, or companies, remunerated for these expenditures by tolls,) but are shared by all who avail themselves of the increased facilities—consumers and producers as well as road owners. If wheat be worth in a city a dollar per bushel, and if it cost 25 cents per bushel to transport it thither from a certain farming district, it will there necessarily command only 75 cents. If now, by improved roads, the cost of carriage is reduced to 10 cents, the surplus—15 cents on each bushel—is so much absolute gain to the community, balanced only by the cost of improving the road. Supposing that a toll of five cents will pay a fair dividend on this, there remains 10 cents per bushel to be divided between the consumer and the producer, enabling the latter to sell his wheat at a higher price than before, while at the same time the latter obtains it at a less cost.

Agriculture is thus directly and likewise indirectly dependent in a great degree upon good roads for its success and rewards. *Directly*, we have just seen these roads carry the productions of the fields to the markets, and bring them in return their bulky and weighty materials of fertilization, at a cost of labour which grows less and less as the roads become better. *Indirectly*, the cities and towns, whose dense population and manufacturing in-

dustry make them the best markets for farming produce, are enabled to grow and extend themselves indefinitely, by roads alone, which supply the place of rivers, to the banks of which these great towns would otherwise be necessarily confined. While, therefore, it would be an inexcusable waste of money to construct a costly road to connect two small towns which had little intercourse, it would be equally wasteful, and is a much more frequent short-sightedness of economy, to leave unimproved, and almost in a state of nature, the communications between a great city and the interior regions from which its daily sustenance is drawn, and into which its own manufactures are conveyed. Among the most remarkable consequences of the improvement of roads, is the rapidly increasing proportion in which their benefits extend and radiate in every direction, as impartially and benignantly as the similarly diverging rays of the sun. Around every town or market-place, we may conceive a number of concentric circles to be drawn, enclosing areas from any part of which certain kinds of produce may be profitably taken to the town, while from any point beyond each circumference, the expense of the carriage of the particular article would exceed its value. Thus the inner circle, at the centre of which is the town, may show the limit in every direction beyond which perishable vegetables, or articles very bulky or heavy in proportion to their value, cannot be profitably brought to market; the next larger circle may show the limit of fruits; and so on. If, now, the roads are improved in any way, so as in any degree to lessen the expense of carriage, the radius of each circle is correspondingly increased, and the area of each is enlarged as the *square* of this ratio of increase. Thus, if the improvement enables a horse to draw twice as much, or to travel twice as fast as he did before, each of the limiting circles is expanded outward to twice its former radius, and embraces *four* times its former area. If the rate of improvement be three-fold, the increase of the area is *nine-fold*; and so on. All the produce, industry, and wealth which by these improvements finds, for the first time, a market, is as it were a new creation.

Supposing that by these improvements the average speed over a whole country be only doubled, the whole population of the country (to borrow a metaphor from an accomplished writer) would have advanced in mass and placed their chairs twice as near to the fire-side of their metropolis, and twice as near to each other. If the speed were again doubled, the process would be repeated; and so on. As distances were thus gradually annihilated, the whole surface of the country would be as it were contracted and condensed, till it was only one immense city: and yet, by one of the modern miracles of science wedded to art, every man's field would be found not only where it always was, but as large as ever it was, and even larger, estimating its size by the increased profits of its productions.

QUESTIONS.

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| <ol style="list-style-type: none"> 1. Why are good roads a labour-saving invention? 2. Why is the grade of a road a matter of great importance? 3. What is the difference in expense in hauling on a level road and on a road with an inclination of one foot in twenty? and why, then, this difference? 4. What is said of the difference in the surfaces of roads? 5. If a road can be so improved as to enable one horse to draw upon it a load that before required three, what amount of | <ol style="list-style-type: none"> money can with good economy be laid out upon the improvement? 6. Are the profits of a road confined to its actual owners? 7. How do you prove this? 8. How is the agricultural interest directly benefited by good roads? 9. How indirectly benefited? 10. Among the remarkable consequences of the improvement of roads is what? 11. Show how these benefits extend? 12. What is the effect upon a community by doubling the speed of its communications? |
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SECOND LESSON.

ROADS. (*Continued.*)

As the limits of this work will not admit of an extended treatise on road-making, we must be content with giving such general directions for their construction as every farmer should be acquainted with.

There are five important points to be considered in the construction of all roads—1. Their direction. 2. Their slopes or inclinations. 3. Their cross section. 4. Their surface. 5. Their cost.

IMPORTANCE OF STRAIGHTNESS.

Every road—other things being equal—should be *perfectly straight*, so that its length, and therefore the time and labour expended in travelling upon it, should be the least possible; *i. e.* its *alignemens*, or directions, departing from one extremity of it, should constantly tend towards the other.

Any unnecessary excess of length causes a constant three-fold waste: firstly, of the interest of the capital expended in making that unnecessary portion; secondly, of the ever-recurring expense of repairing it; and, thirdly, of the time and labour employed in travelling over it.

ADVANTAGES OF CURVING.

The importance of making the road as *level* as possible, will be explained in the next section. And as a road can in few cases be at the same time straight and level, these two requirements will often conflict. In such cases, *straightness should always be sacrificed to obtain a level or to make the road less steep*. This is one of the most important principles to be observed in laying out or improving a road, and it is the one most often violated.

A *straight* road over an uneven and hilly country, may, at first view, when merely seen upon the map, be pronounced to be a *bad* road; for the straightness must have been obtained either by submitting to steep slopes in ascending the hills and descending into the valleys, or these natural obstacles must have been overcome by incurring a great and unnecessary expense in making deep cuttings and fillings.

A good road should wind around these hills instead of running over them, and this it may often do without at all increasing its length. By way of illustration, take an apple, lay it upon a table, and draw a level line from stem to eye, by going round it, and it will not be found one particle longer than if the line were drawn between the same points passing over the top. Precisely so may the curving road around a hill be often no longer than the straight one over it; for the latter road is straight only with reference to the vertical plane which passes through it, and is curved with reference to a horizontal plane; while the former level road, though curved as to the vertical plane, is straight as to a horizontal one. Both lines thus curve, and we call the latter one straight in preference, only because its vertical curvature is less apparent to our eyes.

The difference in length between a straight road and one that is slightly curved, is very small. If a road between two places ten miles apart, were made to curve so that the eye could nowhere see farther than a quarter of a mile of it at once, its length would exceed that of a perfectly straight road between the same points by only about one hundred and fifty yards.

But even if the level and curved road were very much longer than the straight and steep one, it would almost always be better to adopt the former, for on it a horse could safely and rapidly draw his full load, while on the other he could only carry part of his load up the hill, and must diminish his speed in descending it. As a general rule, the horizontal length of a road

may be advantageously increased, to avoid an ascent by at least twenty times the perpendicular height which is to be thus saved; that is, to escape a hill a hundred feet high, it would be proper for the road to make such a circuit as would increase its length two thousand feet. Farmers are too unwilling to allow a road to run through their farms in a winding line. They attach more importance to the squareness of their fields than to the improvement of the lines of their roads; not being aware how much more labour is wasted by them in travelling over these steep roads, than there would be in cultivating an awkward corner of a field.

This feeling is carried to such extent in some of the Western States, that the roads run along the section lines, and as these invariably point north, south, east, or west, it follows that a person wishing to cross the country in any other direction, must do so in rectangular zigzags.

QUESTIONS.

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| <ol style="list-style-type: none"> 1. What are the important points to be considered in the construction of roads? 2. Why is straightness important? 3. What is the effect of unnecessary length? 4. Straightness should always be sacrificed to what? 5. Why may a straight road merely seen upon the map, be generally pronounced a bad road? 6. How do you prove that a road may wind around a hill without increasing its length? 7. Is there any great difference in the length of a road slightly curved, and one that is straight? | <ol style="list-style-type: none"> 8. What is the difference in the length of two roads between two points ten miles apart, when one road is so curved as to prevent the eye from seeing farther than a quarter of a mile of it at a time, and when the other is straight? 9. What is the general rule by which the horizontal length of a road may be increased to preserve a level? 10. Why should farmers sacrifice the shape of their fields to winding roads? 11. What is the effect of this prejudice among farmers in the West? |
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THIRD LESSON.

SLOPES.—LOSS OF POWER ON INCLINATIONS.

Every road should be *perfectly level*. If it be not, a large portion of the strength of the horses which travel it will be expended in raising the load up the ascent. When a weight is drawn up an inclined plane, the resistance of the force of gravity, or the weight to be overcome, is such a part of the whole weight as the height of the plane is of its length. If, then, a road rises one foot in every twenty of its length, a horse drawing up it a load of one ton, is compelled to actually lift up one-twentieth of the whole weight—*i. e.* one hundred pounds through the whole height of the ascent, besides overcoming the friction of the entire load.

The power of a horse, owing to its anatomical form and great weight, is much diminished upon an ascent, and in even a greater ratio than that of a man. Though a horse on a level is as strong as five men, yet on a steep hill it is less strong than three; for three men, carrying each one hundred pounds, will ascend faster than a horse with three hundred pounds.

Inclinations being always thus injurious, are particularly so where a single steep slope occurs on a long line of road which is comparatively level. It is in that case especially important to avoid or to lessen this slope, since the load carried over the whole road, even the level portions of it, must be reduced to what can be carried up the ascent. Thus, if a long slope of one in twenty-four occurs on a level road, as a horse can draw up it only one-half of his full load, he can carry over the level parts of the road only half as much as he could and should draw thereon.

The bad effects of this steepness are especially felt in winter, when ice covers the road, for the slippery surface causes danger in descending, as well as increased labour in ascending. The water of rains, also, runs down the road and gulleys it out, destroying its surface, and causing a constant expense for repairs, oftentimes great enough to pay for a permanent improvement.

The loss of power on inclinations being so great as has been shown, it follows that it is very important never to allow a road to ascend or descend a single foot more than is absolutely unavoidable. If a hill is to be ascended, the road up it should nowhere have even the smallest fall or descent, for that would make two hills instead of one; but it should be so located, and have such cuttings and fillings, as will secure a gradual and uninterrupted ascent the whole way.

QUESTIONS.

1. If a road be not perfectly level, how is a portion of the strength of the horse or horses expended?

2. In drawing one ton up a hill that rises one foot in twenty, how much of the load is the horse compelled to lift up the whole height?

3. Is the power of a horse diminished upon an inclined plane?

4. When are inclinations particularly injurious, and why are they so?

5. Why are the bad effects of steepness particularly felt in winter?

6. Why should the ascent of a road be gradual the whole way?

FOURTH LESSON.

EARTH ROADS.

Roads of earth, with the surfaces of the excavation and embankments unimproved by art, are very deficient at all times in the important requisites of smoothness and hardness, and in the spring are almost impassable. But with all their faults, they are almost the only roads in this country, (the scantiness of labour and capital as yet preventing the adoption of better ones,) and therefore no pains should be spared to render them as good as their nature will permit.

The faults of surface being so great, it is especially necessary to lessen all other defects, and to make the road in all other respects as nearly as possible what it ought to be. Its grades should therefore be made, if possible, as easy as 1 in 30, by winding around the hills, or by cutting them down and filling up the valleys. Its shape should be properly formed with a slope of 1 inch in 20 each way from the centre. Its drainage should be made very thorough, by deep and capacious ditches, sloping not less than 1 in 125. Drainage alone will often change a bad road to a good one, and without it no permanent improvement can be effected. Trees should be removed from the borders of the road, as intercepting the sun and wind from its surface.

If the soil be a loose sand, a coating of six inches of clay carted upon it, will be the most effective and cheapest way of improving it, if the clay can be obtained within a moderate distance. Only one-half the width need be covered with clay, thus forming a road for the summer travel, leaving the other sandy portion untouched, to serve for the travel in the rainy season.

If the soil be an adhesive clay, the application of sand in a similar manner will produce equally beneficial results. On a steep hill these improvements will be particularly valuable. When a road is worn down into hollows, and

requires a supply of new material, its selection should be made with great care, so that it may be as gravelly as possible, and entirely free from vegetable earth, muck, or mould.

No sod or turf should ever be allowed to come upon the road, to fill a hole or rut, or in any other way; for, though at first deceptively tough, they soon decay and form the softest mud. Nor should the road-maker run into the other extreme, and fill up the ruts and holes with stones, which will not wear uniformly with the rest of the road, but will produce hard bumps and ridges.

The plough and the scraper should never be used in *repairing* a road. Their work is large in quantity, but very bad in quality. The plough breaks up the compact surface, which time and travel had made tolerable; and the scraper drags upon the road from the side ditches, the soft and alluvial matter which the rains had removed, but which this implement obstinately returns to the road.

A very good substitute for the scraper, in leveling the surface of the road, clearing it of stones, and filling up the ruts, consists of a stick of timber, shod with iron, and attached to its tongue or mass obliquely, so that it is drawn over the road "quartering," and throws all obstructions to one side. The stick may be six feet long, a foot wide, and six inches thick, and have secured to its front side a bar of iron descending half an inch below the wood.

Every hole or rut should at once be filled with good materials, for the wheels fall into them like hammers, deepening them at each stroke, and thus increasing the destructive effect of the next wheel.

The resistance decreases as the *breadth of the tire* increases on compressible roads, as earth, sand, gravel, &c.

QUESTIONS.

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| <ol style="list-style-type: none"> 1. What is said of the grades of an earth road? 2. How should its shape be formed? 3. How is the drainage performed, and what are its effects? 4. What is done in case the soil is a loose sand or an adhesive clay? 5. How are the ruts and holes in an earth road to be filled up? 6. Why is turf or sod not to be used? | <ol style="list-style-type: none"> 7. What are the objections to stone for filling ruts? 8. Why is the plough to be rejected in repairing roads? 9. What substitute for the scraper is recommended? 10. Why should ruts be filled immediately? 11. What will decrease the distance on dirt roads? |
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[The Editors are indebted, in a great measure, for what is most useful in these lessons to Professor Gillespie's admirable work on road-making, that ought to be in the hands of every reading farmer.]

Wool in Michigan.—The amount of wool exported from the State of Michigan in the year 1848, exclusive of the amount manufactured into cloth for home consumption, was 968,416 lbs., valued at \$213,851 50. The exports for the year 1848, it is expected, have exceeded those of 1847. The number of sheep in the State is estimated at 400,000 to 500,000.

Spare Volumes, and Volumes Wanted.—N. B. Our set of Vol. III. "American Farmer," is incomplete, and we have some duplicate volumes, that might perhaps be exchanged to mutual advantage. The same as to "The Turf Register and Sporting Magazine." We should be glad to hear from any one in the same category with ourselves.

VALUE OF CORN STALKS AS FODDER.

THE question is often asked, if corn stalks are of much value as fodder? We answer, without fear of contradiction, that if well saved and properly used, they are fully equal to the same weight of good hay.

Last winter we fed three yoke of oxen on corn stalks, with the addition of no more food than we should have used with the best English hay. The mode of preparing them was as follows:—

The stalks were cut with the ordinary cylinder machine in pieces of half an inch in length, and placed in a hogshead; three gallons of boiling water, containing one gill of salt, was thrown in upon them, and the top of the cask covered with a blanket. The steam arising from the hot water swelled and softened the corn stalks to their original size, and when cold, a little ground feed was thrown upon them, and thus fed to the cattle.

The oxen worked hard all winter, each yoke bringing three loads per day, of more than a ton each, from a distance of three miles, and in the spring they were as well conditioned as in the fall.

When corn is raised to be pulled while green for boiling, the stalks will contain much more saccharine matter than when suffered to ripen. The stalks should be permitted to grow after the corn has been pulled.

Corn stalks may be grown for fodder, with much greater strength than hay, and entirely capable of supplying food for animals, without the addition of grain of any kind; and for milch cows it would be equal if not superior to any other food. We refer to the method adopted by Mr. Webb, of Delaware, for the purpose of making sugar.

As soon as the ears appear, pinch them off, and repeat this treatment twice; the consequence will be, that the juice of the stalks thus treated will contain as much saccharine matter as that of the sugar cane; indeed, we know of one experiment being made which gave the juice eleven degrees Beaume, while the juice of the sugar cane as grown in Louisiana is but nine degrees Beaume. This mode of growth, however, will only answer in such districts as from want of market find it unprofitable to raise corn for the ears. When this mode is adopted, the planting should be early, for the stalks will necessarily require a hot sun to cure them. If cut too late, the sugar contained in the juice will become acid before they are dry.—*Prof. Mapes.*

We have the greatest respect for Professor Mapes's opinions, and admire, almost to envy, his scientific acquirements. Questions in natural philosophy, abstruse and difficult to ordinary minds, seem to be like A B C to him; but we doubt, nevertheless, whether corn-stalk fodder, cured by any process, as food for animals, "without the addition of grain of any kind," would be found "equal if not superior to any other food." We should apprehend, for instance, that any given number of stalks, left to ripen its grain, and then steamed, as the Professor recommends, along with the meal of its own grain, would make a better feed for a milch cow, than any preparation of the same stalks cured after the method adopted by Mr. Webb, of Delaware, for the purpose of making sugar, and which has gone no further; and only then produced the result which Professor Mapes in his Library would have foretold. But in the absence of more exact trial, we should be disposed to defer to Professor Mapes's opinion. We have often lamented, and so said, that the American Institute, instead of availing itself of the *prestige* of such names as Mapes and Underhill, to give eclat and credit to their establishment and proceedings, did not at once tempt them, with adequate and suitable inducements, to lecture regularly on the scientific principles of agriculture and horticulture, and to analyse thoroughly substances, of the exact nature and elements of which the farmer has daily occasion to be informed.

How long has it been, for instance, since a gentleman of Paterson urged the Institute to have a thorough analysis made of Indian corn, offering himself to contribute one hundred dollars towards the expense?

We have every reason to doubt our own impressions, too, when we differ,

as we respectfully do, with Professor Mapes, in his judgment as to the character and value of the Transactions of the American Institute for 1847. In a ponderous volume of more than 800 pages, distended by no less than six orations at one show, there must needs be, almost of course, some valuable matter. The contributed thoughts of such minds as those of the Professor himself, Dr. Underhill, Col. Clarke, and C. H. Hall, and a few others, who, when in the city, enlighten these meetings by their occasional attendance, would alone, and do go far to redeem the unconnected wishy-washy stuff of which the proceedings of the New York *Farmers' Club*, will be found, on examination, to be in a great measure composed. But to put upon the public, at the expense of the State, such a mass of superficial and desultory matter, including the everlasting and outlandish translations "*by him*," from the *O. Auxiliador-da-Nacional*, the *Annales de la Societe Royale d'Horticulture*, &c., about "*artificial alcaloides*," "*primivexes*," &c., as fair and creditable specimens of what a National Institute, backed by the State of New York, is doing to accelerate and illustrate the progress of agricultural science and improvement, is not, in our humble opinion, quite what the public has a right to expect from those who boast that in "*promoting industry and improvements in the departments of agriculture and the arts*," they present "*an example of economy, industry, liberality, and devotion to the public good, that challenges a comparison with any other institution, in this or any other country*!"

Disavowing and despising all insinuations from whatever quarter, of personal ill-will to the Institute, *per se*, for which no possible motive could be imputed, but the contrary, we only claim the right, as we feel the obligation, to express our opinion for what it is worth, as regards the use they make of the funds placed at their command for the benefit of agriculture.

From the Union, August 1, 1849.

MANUFACTURERS WANT CHEAP FOOD.

THE manufacturers of Great Britain have broken down the corn laws, which secured a monopoly in corn to the landed interest, which is the nobility, in order to let into their country the cheap food of other nations, and particularly of America. The cost of subsistence is an important element of price. Therefore, high-priced food added to the expense of manufacture, and interfered with the ability of the British manufacturer to compete with his rivals of other countries. In proportion as he reduced the cost of subsistence of his operatives, in the same proportion he could reduce wages, and the price of the manufactured article, and thus keep his hold upon the trade of other nations.

The American manufacturer has the *same object in view*, to be brought about by a process directly the reverse of that resorted to by the British manufacturer. Here we have a large surplus of food, for which our farmers *must find a market abroad*. They are therefore interested in opening the ports and markets of other nations for the sale of their flour, corn, and provisions. By multiplying markets, the American farmer increases the demand for his products, and consequently *the prices at home*. Now, as the cost of subsistence is an important element of the price of manufactured articles, the American manufacturer is interested in *reducing the price of food*, as well as of the raw material. He therefore is for leaving the ports and markets of foreign nations shut against our produce. That would keep the vast surplus of the products of our farmers at home, and *put the prices of them at the mercy of the manufacturer*. As the surplus of agricultural products is now so large, if there were not a great outlet for them in the markets of other countries, they would lie on the hands of the farmer, to be taken at such prices as the manufacturer would be pleased to give, or perish.

The same is not only true of provisions, but of cotton, the great staple of the country, and the material upon which depend our manufactures, commerce, and exchanges to a very great extent. If the manufacturers of other countries could be broken down, and thus the foreign market for cotton destroyed, the result would be *that our manufacturers would have it in their power to control the price*, and to purchase it at such rates as they pleased. If prices were, in their estimation, too high, they could stop their machinery for a few months, discharge their operatives, refuse to purchase the raw material, and thus reduce

the price. In short, they would control it completely. *It is the competition of the world which will contribute most to the interests of the American planter and farmer.* Their interests are too vast and too mighty to be accommodated by the demands of a home market.

In a former page of this number, we gave a portion of an article from *The Union*, and we did so because we desired to show to our readers an extraordinary blunder of "Common Sense" reproduced and adopted as their own by the editors of that journal. On reflection, we have concluded to give the remainder of it, as we now do above, that our readers may be enabled fully to understand the grounds upon which they are desired to repudiate the doctrine which teaches that the farmer and planter are benefited by the adoption of measures tending to compel the loom and the anvil to take their natural places by the side of the plough and the harrow. We are anxious that the arguments of our opponents may be read, that their flimsiness may be fully appreciated.

We are here informed that the surplus of our food is so large, that had we not "a great outlet" for it abroad, it would perish in the hands of the farmer. What is its extent, and what now becomes of it? In an article now going the rounds of the papers, and that *ought* to have originated in *The Union*, as it certainly embodies the views entertained by its editors, our annual surplus of food is stated at the enormous quantity of three hundred millions of bushels, for which we need a foreign market.

What now is the extent of this great outlet, so important to our farmers, and what reliance can be placed on its permanence? In the nine months following the first of September in the three past years, our exports to England, the only market in question, were as follows:—

	1846-7.	1847-8.	1848-9.
Wheat and flour	1,178,072 qrs.	104,720 qrs.	543,598 qrs.
Indian corn and meal	1,767,172 "	374,324 "	1,197,576 "

The whole quantity of wheat and flour imported into England in *six* months from Sept. 5, was 3,534,474 quarters, and we sent in *nine* months 543,598, which would give us about *one-eighth* of the trade. Supposing our whole export to be continued to the same extent in future years, and to amount, on an average, to 20 millions of bushels, what shall we do with the remaining 280 millions? What do we now do with it? What shall we do with it when it shall double in amount, as we are promised that it will do?

Hitherto we have supplied England almost exclusively with flour; but a different state of things has now arisen. The import thereof into that country in six months from Sept. 5 was 1,600,000 barrels, of which we supplied 835,693, or little more than one-half; and the latest advices, at the time at which we write, inform us that much of the flour imported from this country into Liverpool was offered at 21s. per barrel, or almost precisely five dollars, and would net to the shipper, at a freight of only 2s. 6d. per barrel, \$3 20. The policy of the government has driven capital into the building of ships, until freights have become almost nominal, and the loss to the ship-owner goes temporarily to the farmer; but such a state of things cannot long continue, and as freight gradually rises, wheat and corn must go down.

Thus far, the demand abroad for our grain has been maintained by the same circumstance that has destroyed the demand for cotton—the hostilities that have interfered with the trade of the Baltic, the great source from which England derives her chief supplies of food. That cause is now about to be removed, and hence it is, in part, that cotton has risen, as grain has fallen and must continue to fall. We are now driving tens and hundreds of thousands of people to the West, there to become producers of food, when they would have preferred to remain at home, consumers of food; and we are doing this *on the faith of our being able to supply one-eighth of the food imported* for the consumption of the workmen of England, while we are confidently

assured that if we could have the supplying of *the whole quantity* of food, *domestic and foreign*, consumed by the iron, cotton, and woollen interests of England, it would make no impression upon our great surplus! Surely, the men who say and do such things as these must be among the wisest of their generation!

A few days since we visited Schuylkill county, recently one of the most flourishing portions of Pennsylvania. Every thing was there in a state of paralysis. The demand for labour had, literally, no existence. The manual labour and the machine power there provided, and all to be maintained and preserved, are sufficient for the weekly production and transportation of 60,000 tons of coal per week, worth \$240,000; but the destruction of the iron trade, and the cotton and woollen trades, and the paper trade, and the hat trade, and all other trades, has so far diminished the power to consume fuel, that the demand for the year will be supplied by 30,000 tons, worth less than \$120,000. Here is a weekly loss to the community of \$120,000, or about six millions of dollars per annum, and a loss to the farmer and planter of six millions of dollars of market for their products; and the loss to the nation is as complete as if the same amount had been destroyed by fire. Nor is this all. In addition to producing 60,000 tons of coal, there is labour power now in that county adequate to the production of roads, machinery, houses, opening of mines, and other improvements, to a vast amount; but for these things there is no demand, and the labourer is unemployed, and unable to purchase food or clothing.

The result of all this is what might be anticipated. Those who can do so are flying to the West, to produce food for themselves; and those who cannot, are turning their attention to the cultivation of potato-patches, that they may cease to be obliged to purchase from the farmer. We should be glad if the editors of *The Union* would now inform us how the conversion of miners and mine labourers into potato-growers tends to diminish the surplus of food.

If they and their correspondents would but take the trouble to obtain some slight acquaintance with the subjects in regard to which they undertake to teach their readers, they would, certainly, we think, write much better than they do.

ON WIRE FENCES.

"*And there is no new thing under the sun,*" said Solomon—and who dare dispute his word? Some, perhaps, had imagined that *wire fences* were comparatively new; but look here at the old Memoirs of the Philadelphia Agricultural Society:—

Account of Wire Fences. By White and Hazard.

Read January 8th, 1816.

White's Town, 1st month, 2d, 1816.

FRIENDS:—The attention of the Agricultural Society having been frequently directed towards the discovery of substitutes for the usual expensive mode of fencing, and invited inquiries upon that subject, we make no apology for offering to their consideration a plan which not only presents a diminution of expense, but also to the farmer a source of very considerable profit.

It is to form rails of wire, and posts of living trees. In order to render the advantages apparent, we shall first present a statement of the expense of a common post and rail fence, and then exhibit an estimate of the cost, and, we trust, a reasonable average for the produce of a fence erected on the plan which we would propose.

Cost of a common fence for 100 acres for 50 years	\$3,080
Cost of a wire fence for " " "	1,751
Leaving, without any other consideration, a saving and consequent profit of	\$1,329

But, in addition to this, we must take into view that the whole produce of the trees will be a net profit. The amount of this will, in some measure, depend on the nature of the trees, as indicated by the richness of the soil, or the judgment of the farmer. We subjoin a catalogue of such trees as have occurred to us, as forming a sufficient variety, either in regard to the consumption of the farm, or to the supply of market. We consider that after ten years from the time of planting,

244 apple trees will annually produce, at \$1 each	\$244
30 cherry do. 50 cents	15
20 pear do. 50 cents	10
10 plumb do.	3
10 shellbark do. \$1	10
50 chestnut do.	12
20 walnut do. \$1	20
5 butternut do. (<i>Juglans Cinerea</i>) 1	5
5 English walnut do. (<i>Jug. Regia</i>) 1	5
250 buttonwood will spare from tops 24 cords fire-wood, at \$3 per cord	72
Multiply this annual amount by the 40 years given	15,840
From which deduct the cost of the fence, as above	1,751
Producing a net profit of	\$14,098

To the credit of the wire fence in the period of fifty years.

The interest on the annual produce, it is presumed, will be sufficient to keep the fences in repair, not only for fifty years, but a period beyond calculation.

An additional advantage will accrue from this disposition of the fruit and other trees, as the soil they have hitherto occupied may be thrown into arable and meadow land.

With regard to the strength of a wire fence, we do not hesitate to express our belief in its sufficiency to resist any attack it may be required. We have given it a fair trial at the Falls, with the most breachy cows of the neighbourhood, and it is remarkable that even dogs avoid passing over it.

In case of the wire breaking by any casualty, it is easier repaired than any other fence.

The wire No. 6 will sustain a weight of 1300 lbs., when stretched in the manner of a rail. No. 9, 750 lbs., and No. 11, 300 to 450 lbs.; ascertained by fair experiments for the purpose.

Respecting the duration of the wire, daily experience sufficiently speaks, that when protected by a coating of linseed oil or paint an entire reliance may be placed on it.

We conclude by recommending the subject to the investigation of the Society, informing them they may see a wire fence erected on this plan at R. Watkin's tavern, at the Falls of Schuylkill.

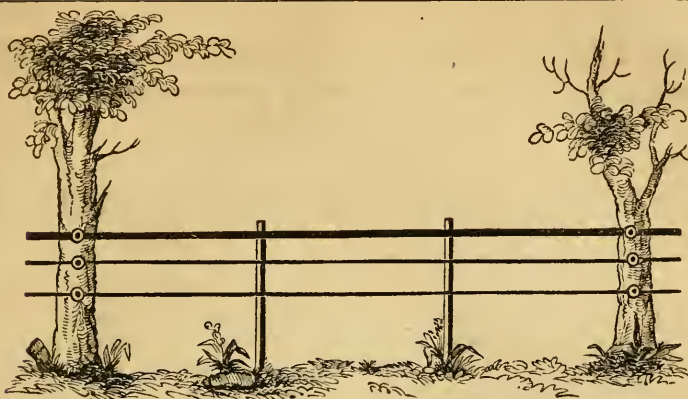
We are very respectfully, WHITE & HAZARD.

Hon. RICHARD PETERS, *President of the Agricultural Society.*

ESTIMATES.

Common post and rail fence, 5 rails high.

55 rails at 10 cents each, make a fence 100 feet, is	5-50
11 posts " 25 "	2-75
Putting up fence, holing and pointing, at 25 cents per panel	2-75
Cost of 100 feet	\$11-00
At the above rate, 11 fields of 9 acres each, and 1 field of 1 acre, will cost at once fencing (making 100 acres)	\$1,540
In 50 years the expense on the fence will be equal to another complete fence, and is	1,540
Total cost without interest for 50 years	\$3,080



A Wire Fence with living trees, &c., with 4 rails.

1 top rail, No. 6, weight 11 lbs., at 16 cents	\$1.76
3 under rails, No. 9, weight 20 lbs., at 17½ cents	3.50
6 live posts or trees, 18 feet apart, at 12½ cents	.75
6 small posts, to be set in with the live ones, close behind, and at equal distances apart, so that when the dead posts decay, the wire can be attached to the live ones, by moving the wire rails a few inches back	.75
Planting trees and posts, and putting up fence	1.50
10 space posts, 2 inches square, to set on the ground, or on a stone, the wires merely to run through, to keep them stayed in their places	.50
24 rivet head nails	.24
Linseed oil, to coat the wires	.07
	\$9.07

But to fence against hogs, add

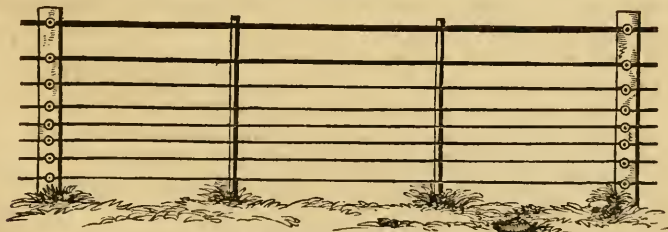
4 rails of No. 12 wire, weight 13 lbs., at 12 or 19 cents	2.61
94 round-headed nails	.24

Cost of 100 feet, against all cattle, hogs, &c. \$11.92

At the above rate, 100 acres, in 11 lots of 9 acres each, and 1 of 1 acre, will cost (and will last 50 years) \$1,751

This fence will produce from the fruit, fire-wood, &c., per estimate, \$396. Commencing ten years after setting out, so that in the 50 years there will be 40 annuities of that amount. Amounting in the whole to 15,840

Net profit of the two fences in 50 years, without interest. \$14,089



Wire Fences with dead posts.

5 rails No. 12 wire, 100 feet long, will cost, including all contingencies, for a complete fence, or say less than 70 cents per panel of 9 feet	\$7.58
Or with top rail No. 9, and four others No. 12, cost less than 80 cents per panel	8.09
Or four rails No. 9, about 80 cents per panel	8.97
Or four rails No. 6, about \$1 per panel	12.12

NOTE. The increased demand for wood fences will *increase* their price.

But the demand for wire fences will *decrease* its price, as the greater the demand for wire, the cheaper it can be made.

ON THE USE OF OXEN IN MARYLAND AND VIRGINIA,

BY E. S. STABLER, OF SANDY SPRINGS, MONTGOMERY COUNTY.

WITH NOTES BY THE EDITOR.

THIS letter was written at the particular instance of the Editor of "The Plough, the Loom, and the Anvil," in answer to inquiries by a respected correspondent, and was designed to be sent to him directly, but, for reasons given in a postscript of our own, we have assumed the responsibility of giving it at once to the public, that it may at once be read now, by thousands, spread throughout the land.

Harcwood, 7 mo. 20, 1849.

JOHN S. SKINNER—Respected Friend—Your favour of the 7th is received, enclosing a letter from Dr. R. S. B., of Va., who desires information as to the comparative value of horses and oxen, for farm work, and particularly for the plough; and with the request to write an answer, "founded on your (my) knowledge and experience," &c. &c. True, I have "written nothing for 'The Plough, the Loom, and the Anvil;'" not because I am an uninterested spectator of its course, and success; I fully approve of the one, and my good wishes attend the other: but I have no wish or desire of notoriety, and some, I fear, are already tired of seeing my name before the public. It is a source of more gratification to me, and profit also, to read of the experience and practice of others, in agricultural pursuits, than any thing I can contribute to your pages. As the Dr. appears to be quite in earnest in his desire "to turn over a new leaf," and as I have for many years made constant use of oxen, and, under the existing circumstances, in preference to horses, for farm purposes, the plough included, I have no objection to give him the result of my "experience;" for I doubt not he would quite as willingly respond to a brother farmer, if called on for any information he might have to impart. The better to understand the views of each, I will here quote his letter. He says:

"I have been seriously contemplating an alteration in the mode of cultivating my lands in future; that is, to substitute the labour of oxen for that of horses. I have been driven to the idea, by the immense *consumption* of horses in the way of food. It is, however, difficult to break in upon long established customs, and he who makes the *first* experiment will generally encounter the derision of his neighbours, and a charge of being *visionary*. But, at the risk of all these consequences, I feel disposed to make the effort to increase the net profit of farming in this county. But, in making an experiment, it is well to look to the experience of others who have gone before you. I therefore wish to know of you, whether it is within your knowledge that the ox has been used in Pennsylvania, in *plowing in limestone soil*? I have had my fears, whether in the *heat of midsummer*, when our lands are fallowed, the ox could endure the heat, and plough one or one and a half acres per diem? A limestone soil, you are aware, is very stiff and difficult of cultivation. The next question is, when he is yoked to the plough, in what manner is it effected? Is a chain attached to the beam of the plough? and if so, it would appear to me that it would be difficult to control the depth of the ploughing.

"Can you not give a plate in your next number, as nothing reaches the comprehension so exactly as *seeing* any kind of machinery. I am happy to find that your paper has so good a circulation amongst us. I have endeavoured to do my share towards furthering this object."

Like many others with slender resources, (and in my case with impaired health, from a city life,) I began farming with horses to do my ploughing,

and, indeed, the farm work generally. I had also a yoke of oxen. With no experience in my new vocation, it was necessary to superintend considerable hauling for building, and it was here I was first made aware of the decided advantage of the ox, over the horse. The horses were not always true at the *pinch*, when every effort was required; and on the oxen we usually had to rely at last, to get out of our difficulties. There were other advantages in their use, evident at this early stage of my agricultural education, if not so important, yet quite as apparent. One was the expense of harness, eight to one, at least, in favour of the ox; and the time saved in getting to work—we could often yoke up, and get through with a short job, before the horses were harnessed and *ready* for work.

For the first year, I had no other expectation than to buy grain for my family and stock, expecting afterwards, and being determined to use every effort to raise at least enough for my own consumption; but the experience of a year or two fully satisfied my mind, that, without some change for the better, I could not get along at all. My horses not only consumed about all the grain they aided in raising, but I was compelled to buy more for their especial use and benefit. The farm was small, and withal very poor, and what with their consumption, farming was found to be a losing concern. But I had to make my living, either off my farm or by my “wits,” for my health forbade a return to the city. The idea of going in debt was an alternative not to be entertained for a moment; another alternative, and which appeared quite as uncongenial to my feelings, was, to remove to the far West, and relinquish every tie of kindred and friends. This I determined never to do, unless to avoid actual want.

I was fully aware of the feeling referred to by Dr. B., of breaking “in upon long established customs;” and I had heard it often remarked, too, that oxen could not stand ploughing in the heat of summer—it might do to the North, &c. &c. I believe this was the generally received opinion, though probably adverse to that of some others, and to some extent, at least, practised by a few individuals, so far as to use oxen in the plough.

In 1822 or '23, I resolved to give the plan a fair trial; and, with this view, worked the oxen, and took hold of the plough-handles myself, and began in “midsummer” to break up a fallow field for wheat. For a day or two the oxen suffered greatly with the heat, in the middle of the day—but, by rising with the dawn, and resting two or three hours at noon, and also feeding on dry food, I found nearly as much was ploughed by the oxen as with the horses worked by a hired man, and quite as well done. The horses consuming about one bushel of grain per day, and the oxen none. The horses walked faster, but the oxen turned in less time, and the difference in amount of work was not very material. The oxen, though generally slower, will probably be found much the most *SURE*, by those who are placed under similar circumstances.

This was a “successful experiment,” in every respect, and has been carried out to the letter; sanctioned also by subsequent experience and practice, for some twenty-five years. For many years there was not a furrow ploughed on the farm, except by oxen, which enabled me to begin, and to a considerable extent successfully carry out, a system of improving my nearly worn-out land. This could not have been effected (at least not by the best management I was capable of) by the use of horses alone, in any thing like the same time, or without more capital than was at my disposal.

To determine the best mode of working oxen to the plough, I used both the tongue and the chain; the latter was found preferable on all accounts. The team turns in less space, and in less time; and by it, the depth is also regulated with more facility, by merely lengthening or shortening the chain.

For the use of oxen, the beam should be set rather lower than for horses—14 to 15 inches is the proper height for the former, and 17 to 18 inches for horses—the line of draft being lower in the one than the other.

Oxen, if properly broken, quite as readily, if not more so, take to and keep the furrow, than horses. We do not think of having either a line or driver, even with a double yoke, and in the plough, except when “breaking in” young cattle—the word of the driver, or the motion of the whip, being all-sufficient.*

To judge of the capabilities of the ox, by the badly used, houseless, over-tasked, and half-fed animals we sometimes see in the yoke, is doing him great injustice. Treat the horse in the same unfeeling manner, and where would be his high mettle and noble spirit? he would speedily arrive at a premature old age, valueless to his owner, and a cast-off to feed the carrion crows. That the ox can better stand this harsh usage, is certainly no valid or sufficient reason that he should be subjected to it. Use him with equal care and humanity, and he will just as certainly, and with more profit, repay it to his owner.

I am not aware, nor do I believe, from much observation, that the “limestone land” referred to, is any more difficult to plough than mine, which is a stiff clay subsoil. Much that I have examined is easier to till. In breaking up our sward land for corn, we generally work two yoke, and go to the depth of from 7 to 9 inches. Oats usually follow corn, in my rotation, and to render the summer ploughing easier, for the following crop of wheat, (it is also better for the oat crop, and freer from weeds,) the oat ground is *always* ploughed with the bar-share—the difference in the after ploughing is material, be the season dry, or otherwise.

In hauling limestone with oxen, we readily make a trip, of five or six miles and back, in half to three-fourths of a day; and we have made the trip to Washington and back in 24 hours—distance 20 miles—and loads both ways, resting in the heat of the day, in warm weather.†

I usually keep two yoke of oxen to one pair of horses, the first cost being generally about the same, but here the parallel ends. It costs much less to keep, and in good order too, the two yoke, than one pair of horses, and they will do more work. The expense, and wear and tear of harness is fully as 8 or 10 to 1 in favour of the oxen; and for most farm purposes, such as hauling rails, stone, fuel and manure, they are decidedly preferable. We use them exclusively for hauling hay or grain into the barn. A single yoke will readily go in with a ton to a ton and a half of hay, and at an angle on the bridge of 5° to 6°. They understand the business perfectly‡—there is no need of the whip—at a single word, every muscle is exerted, and, if necessary, strained to the utmost. The same yoke, or a strong horse, by the aid of machinery, will unload the hay, and to any part of the mow, in from 8 to 12 minutes, according to the height to be raised, and while the hands are comparatively resting. But this is digression.

Add to the advantages above enumerated, the relative value of each team, after some five or six years’ service, under humane and proper treatment, and we find that while the horse has depreciated some 33, if not 50 per cent., the ox, with a season’s rest, and good pasture, is worth at least his

* The ox never mistakes his orders—never haws when told to gee, or gees when told to haw.—*Ed. P. L. & A.*

† The rate on the national turnpike, for horses, is from 14 to 16 miles a day.—*Ed. P. L. & A.*

‡ We have seen single yokes of oxen, at Worcester, Mass., back four tons of stone up a hill several hundred yards.—*Ed. P. L. & A.*

first cost in beef; and will suppose, (but such has not been the case with me,) that the horse has paid as liberally for his keeping in the mean time.*

In ploughing late in the fall, winter, or early in the spring, we usually feed our ox teams with grain, but only with half the quantity given to the horses, and then only when the work is long continued or very heavy. I have found it more satisfactory, and much more economical, to buy young cattle, say three years old, and break them ourselves, than to purchase those already broken, or *half* broken, which is more frequently the case, and not unfrequently "breachy," or with some other bad habit. Gentle treatment in breaking is quite as important as in the after-management; and they may about as readily be taught to "come under" the yoke, a distance of 50 or 80 yards, as to *run away* from it, and to spend half an hour to get them yoked; taking young steers from the drove, whilst fatigued with travelling, and the breaking is much more readily accomplished.

But it is scarcely necessary to give the Doctor a dissertation on this branch of the subject, as he would doubtless (and I would so advise him at the offset) procure such as were well broken to the cart at least; to get such accustomed to the plough, and to keep the furrow, is an easy transition. Nor is it necessary, I presume, to give "a plate," or cut, to explain the mode of attaching the team to the plough—it is quite plain, and readily understood. A good, well-shaped yoke and bows are very important items—quite as important to the comfort of the ox, as is an easy-fitting shoe to the man with corns on his feet. Every sensitive feeling in my nature has at times been aroused to witness the cruel treatment this poor drudge is often subjected to. Left by unfeeling task-masters to the still more careless and unfeeling drivers, I have seen oxen compelled to draw heavy loads, with neck and shoulders galled to the quick by a badly-fashioned yoke, when the almost constant use of the whip or the goad could alone induce an onward move—when in other hands, I have seen the ox team, at a single word from the driver, spring to the draft and exert every nerve, and that willingly, too, to do his allotted duty.

If I mistake not, you have given cuts in the past volume, [see pages 359, 360,] of good yokes, both double and single. The latter we have used in working corn, but, as I am now compelled to keep two horses, for the saddle and carriage, they also do this work. In the same volume are

* In the *Abstract* from the 'returns of all the Agricultural Societies, published annually by the State of Massachusetts, (small in proportion as it is superior for its intrinsic value, as compared with the mass of balderdash published at the public expense in the name of what is called the "New York Farmers' Club," under the "auspices" of the American Institute,) there is a report, by W. Proctor, which we take the opportunity, with pleasure, to transfer to our pages. It is on the subject of **PLOUGHING WITH SINGLE TEAMS.**

"From these experiments we learn, that an acre of land may be ploughed, by a single pair of cattle and one man, in four hours, and probably nearly two acres in a single day. When we take into view the expense of operating a team of this description, compared with those usually employed in this business, it will be quite well for our farmers to consider whether most of their work cannot be done with one pair of cattle, and if two are to be used, would it not be better to cut the first furrow of less depth, and apply the power of the second pair to a subsoil plough, to follow directly after? If we do not entirely mistake the signs of the times, our modes of preparing lands for culture will ere long be essentially modified, by the use of the *subsoil* plough. In the county of Worcester, where the management of land and teams is understood as well as in any part of the Commonwealth, the premiums are limited to *one pair of cattle, without a driver.*"

By driver, the Southern reader is to understand, a man to walk alongside, besides the ploughman. In Massachusetts they consider it against good management to offer premiums for horses—so decided is their conviction, generally, of the economy of the ox team for ploughing and hauling.—*Ed. P. L. & A.*

also two excellent essays on the breaking and management of oxen, to which I would refer the Doctor, should he desire more information on this important branch of rural management and economy; or, I will with pleasure give him any further information in my possession. As I am not apprized of the name of his post-office, please add it to the address, and forward to him.

I am, very respectfully, EDW'D STABLER.

We have forgotten the Doctor's exact address. His post-office is somewhere in the "valley" of Virginia—that is, in that splendid farming region between the Blue Ridge and the Alleghanies, drained by the Shenandoah, embedded throughout with limestone, and ornamented and shaded with sugar-maple and locust trees. The man who has skill and capital, and desires to enjoy the prospect of a beautiful farming country, and the matchless pleasure of visible improvement from his own industry and good management, need go no farther than to the Valley of Virginia, to set himself down as a farmer. But then he must content himself to listen, for the residue of his life, to pæans rung on the beauties of "free trade," and the sure blessings of dependence on foreign markets—markets to be depended on only in time of war, and famine, and pestilence abroad. The Virginians like to send the products of their industry, taxed with enormous cost of transportation and exchange, to a great distance, in search of customers, and to pay for cloth and iron made in England, by labourers over-worked and half-fed, while their own mountains, and even their alluvial lands, abound in coal and iron, and spread out congenial pastures of perennial freshness, for sheep without number, and mill-seats to convert the wool into cloth.

Thirty years ago, on the establishment of the old "American Farmer," without a single patron, (as in the case of "The Plough, the Loom, and the Anvil,") we were ordered to journey for our life, on horseback, to that glorious region, where the worshippers of Hygeia go for restored health to the delicious bath of the "warm springs," and the sparkling fountains of the "white sulphur." Never shall we forget the impression made by the view of the country in passing out from that magnificent break in the mountains at the confluence of the Shenandoah and the Potomac—nor the yet deeper impressions made on a heart then comparatively fresh and young, by the warm welcome and hospitality of such men as the Turners, the Holmeses, the Hites, the Caldwells, the Divers, the Minors, and even the sages of Monticello and Montpelier. But young people travelling, like young trees in the forest, find themselves everywhere surrounded by congenial friends, ready to cultivate their acquaintance and good will. Alas, "the noiseless foot of time," how it steals upon us! and when we have passed the hill-top, and begin to descend into the vale of life, how different the condition and the prospect! After a certain epoch, as we gain in years, we lose in favour with the world. Mankind learns instinctively to look on gray hairs as the symbol of inability, not of power, to confer either pleasure or substantial benefit. It is not in human nature to lean upon, or seek shelter under, or to cultivate intimacy with such, whatever may have been their services to the State, unless still palpably invested with power and authority to advance their fortunes: How much more genial the rays of the rising than of the setting sun! For ourselves, when less than twenty-five, we found it much easier to get access to the social fireside of a Jefferson or a Madison, a Monroe or a Crawford, than to be honoured with the privilege of the briefest interview with a modern cabinet minister.

On the trip through the valley referred to, we noticed particularly the appearance of the crops, and had opportunities to be instructed by the conversation of the leading men on our journey. And now again, lately, after an interval of more than a quarter of a century, we are forced to say, that while the people of that region fully maintain their excellence in the virtues of intelligence and hospitality, the face of the country has, according to our impression, rather deteriorated than improved. Has no one the means of comparing the average product per acre, of Jefferson, and Shenandoah, and other counties, in 1819 and 1849? We should rejoice to have our impressions corrected, on reliable data.

But our original purpose, from which we have run into all this digression, was to say, that, as we have forgotten the address of our respected correspondent, who inquired about the use of oxen, and to whom friend Stabler requested we should send this letter—and as we are sure he will see it here, and, with us, consider it a light not to be hid "under a bushel," we take the responsibility of publishing it, as it is, and for the benefit of all our readers, anticipating their thanks for doing so, in the confidence that we shall deserve them.—*Ed. P. L. & A.*

ALL ABACK!—DRAINING, LIME, AND GUANO,

SAID BY THE PRESIDENT OF THE AMERICAN INSTITUTE TO BE “DESTRUCTIVE TO ALL VEGETATION IN THIS DRY SOIL.”

SURELY “man never *is*, but always *to be* blessed” with reliable information in agricultural affairs! All our life long, or at least since, when a boy, we used to witness the admirable dexterity and sleight of Irish ditchers, at work, here and there, in Calvert county, Maryland, we had supposed it was, and would be, over a large portion of the country, highly useful thus to draw off from meadows and fields all superfluous water, whether concealed in the earth, as is often the case, or visible on its surface; to the end that the soil might be duly pulverized and warmed. To our simple apprehension, it seemed that the operation might be salutary, not only for the country and the land, but that to conduct such superfluous moisture most advantageously away, must require, too, some knowledge of geology, hydraulics, and other branches of natural and mechanical philosophy. As to the question of the great *utility of draining*, as applicable to *much* of the land in *all parts of our country*, it was not supposed that any doubt could be entertained on that point, until it was proposed as a question for discussion in what is called “The New York *Farmer’s Club*,” which meets bi-monthly in Broadway, at the American Institute. There, after raising the question, it was very profoundly remarked, that “*books* on agriculture frequently contain errors!” and that “draining is, to us, quite a different affair from what it is in the moist countries of Europe or elsewhere,”—and now again the “books” which are said to constitute the “principal sources of instruction” in agriculture, and the operation of *draining* as applicable to our country, are seen to be even derided by a gentleman whose public spirit and various intelligence, no less than his position at the head of a great “American” Institute, lends force and authority to all he says—rendering the more necessary, on that very account, a review of the sentence pronounced by him, as President of the Institute, and published by the State “at some considerable cost,” against the necessity and applicability, in our country, not of *draining* only, but of *lime* and *guano*!

But to come at once to what we propose to examine:—Will not the reader participate our surprise at seeing the following, from the “closing address” delivered by General JAMES TALLMADGE, President of the Institute, at its Twentieth Annual Fair, October 28, 1847?—that being the last of *six orations* pronounced on that occasion, all published by the State of New York, whose sanction lends additional weight to all that emanates, even as in this case, from the highest official authority.

“English books on agriculture,” says General Tallmadge, “*are our principal sources of instruction*. New York is about 41°, while England is situated at 50° to 60° of north latitude. *Their* climate, a considerable portion of the year, is one of rain and fogs. Their soil is clay—adhesive, cold, wet, and sour. Their books direct ‘*draining*,’ to lead off from their soil, or arable lands, the surcharge of water, and the free use of lime and guano, to impart heat and a vivifying power for vegetable production. Our climate is arid, and our soil is dry-loam and sand. A place suited for draining is the exception, and not the rule, in this country. During our summer drought, the fountains are dried up, and vegetation burned. It is hard consolation,” adds the General, derisively, “at such a crisis, and when his *flocks* are *lowing*, to ask the husbandman to read a book on ‘*draining*,’ and directing the use of ‘*lime* and *guano*,’ (good in their place,) which experiment has shown to be *destructive to all vegetation* on this dry soil.”

Such being the sentence pronounced by the President of an "Institute" bearing the high title of *American*, and which attracts to it much of public attention, and, as they state, from 200,000 to 300,000 visitors to a single one of their exhibitions, and these opinions of our "principal sources of instruction" in agriculture, and of the value and applicability of "draining, lime, and guano," having been so far sanctioned by the State of New York as to be deemed proper to be published and distributed at the State's expense; it may be permitted, if not expected of the conductor of an agricultural journal, to examine the validity of such opinions, and their claim to be thus promulgated. Of our own crude notions to the contrary of all that is here said, there is this in their favour, if erroneous—that *they* will never be bruited over the country, at the cost of the State, in the shape of "Transactions," to be distributed, as premiums, through the American Institute, as, whatever may be said, *ex cathedra*, in reply to us, is sure to be—no small advantage, it must be admitted, to those who enjoy the privilege of having the State put forth whatever they prepare for publication.

First, then, as to the accuracy of the declaration that "English books on agriculture are our principal sources of instruction." We have no hesitation in saying, on the contrary, that American agriculturists do now, and have for the last half century, at least, depended for their instruction on "English books" as little, or less, than any other class of people whatever. Their instruction has been eminently practical, and almost too exclusively so, until within the last few years, and as *eminently American*—founded on *American* experience, detailed, explained, and illustrated by *American* farmers and *American* writers. Look back for more than thirty long years prior to the establishment of our numerous and able agricultural journals, which have for nearly that time been pouring a flood of light over the country!—go back to the Memoirs of the Agricultural Societies of *South Carolina*—of *North Carolina*—of *Virginia*—of *Philadelphia*—of *New York*—and of *Massachusetts*—and you shall see volume on volume, filled with very able, practical communications, founded on the results of experiment and field-practice *here*, at home, contributed by men uniting, in a remarkable degree, zeal, high character, close observation, and *wide American experience*.

If, in their proper public sphere, our statesmen and legislators had done half as much as our great and good men—our Washingtons and Jeffersons, Pinckneys, Madisons, Peters, Livingstons, Deans, Lovells, Pickerings, and others, have done by their writings to promote the cause of agriculture, and to raise it in the public esteem, we should not see it, as we now do, the very last to have departments and schools provided for its advancement. Yes, we repeat, let any man look to the published memoirs of the old societies to which we have referred, and see whether he does not find, considering the vast difference in our population, a greater number of very distinguished men, taking active part in their proceedings, than even at this day; and whether, moreover, these voluminous memoirs are not very remarkable for their indications of anxious inquiry, of extensive research, and various experience, and particularly whether they do not abound in proofs of independent thought, and practical American information; manifesting, in a striking manner, *exemption from dependence on "English books"* as their "principal sources of instruction?"

Examine the writings of Arator, which, from newspaper essays, took the form of a book, and had great currency at the time, and see if they are not as exclusively American in their texture and character, to compare small things with great, as Washington's Farewell Address itself.

We come, then, to the hundreds of volumes of agricultural periodicals, which have accumulated after having circulated far and wide over the whole

country, and supplying for thirty years, long before the American Institute came into existence, and constituting almost exclusively our "sources of instruction in agriculture," and they too, will be found filled, not with British theories, but with *American facts and experience*. Look at "Buel's Cultivator," at "Fessenden's New England Farmer," at the "Genesee Farmer," at Ruffin's "Farmers' Register," at the "American Agriculturist," and at the "Farmers' Cabinet," either of which has diffused more valuable light in one year, on agriculture, than the American Institute in the same period—and let any man answer whether it can be said, that with these, and a host of agricultural journals besides, "English books on agriculture are our principal sources of instruction"? It would, as we humbly apprehend, and in deference to the President of the American Institute, be much nearer the truth to say, that the very existence of the prejudice against English books, which may be fairly inferred, if it be not fomented, by such denunciations as here we meet with, has prevented editors from availing themselves of them to the extent which they might have otherwise profitably done, for their readers. Every man of common sense knows, that there is a wide difference between the climate of England, the cost of labour, the tenure of land, and many other circumstances, entering into all questions of agricultural economy, when we would draw conclusions from the practice of that country with a view of ascertaining what can profitably be done in this. This is so obvious, it floats so palpably on the surface of inquiry, and has been so often repeated, as to have become a stale truism, for which it would be ridiculous to claim the merit of discovery; yet, does it follow that there are not principles laid down in "English books," of universal application, worthy to be studied, as they relate to the form and structure of animals and machinery, to the construction of buildings, the analysis of soils, and the composition and use of manures, and various other things, in which, with her more ample means, greater experience, higher prices, and much more liberal premiums, to stimulate and reward genius and discovery, England, without any disparagement on our part, may be supposed to be ahead of us, and therefore worthy to be studied, even in her "books," with that due discrimination, the power of which may be accorded to all readers of ordinary understanding? If, indeed, she has nothing to teach us, nothing in her "books," that may serve as "sources of instruction," of what avail are the volumes that contain accounts of agricultural exhibitions for fifty years, where *pounds* are expended for *pence* given by the "Institute," out of its own proper funds, over and above the donation by the State, for *agricultural objects*? Of what avail have been the accounts which their books give us of the examinations, lectures, and course of instruction, at those noble schools of hers, so often and justly extolled, when it is found convenient to use them as arguments in favour of the "great school" to be placed "under the auspices" of the American Institute, *near the city of New York*? For it is to be observed, that as well here, in this "closing address" of the President, as elsewhere, "public aid" is asked of the State, to establish a school, always to be located "near this city"—a city of some 400,000 inhabitants—contrary to the declared experience of the renowned Fellenbergh, who expended a noble private fortune in the establishment of his school, in which he averred he could never have succeeded, if located "near" to a large city.

Far from deriding all resort to English books as sources of instruction, we much question whether an act of greater service could be rendered to American agriculture, than to compile, regularly and judiciously, one good-sized quarterly, from the two quarterlies published by the Royal Agricultural Society of England, and the Highland and Scotch Agricultural Societies—any single one of which contains more of original thought and valu-

able suggestion than a year's transactions of the New York Farmers' Club, were it not that these are sprinkled with suggestions, when they occasionally attend, from such men as Mapes, and Underhill, and Clark, and Hall, and a few others, giving to the mass of unconnected twaddle a certain degree of colour and richness, as the milk of a single Alderney will do to that of a dozen sky-blue milkers, fed on still slops—for some men are like some cows—they'll yield any quantity of words upon any subject, it matters not to them what. In fact, they don't wait to be drawn—"it runs, and runs, and will for ever run"—but, as to the *quality*?

We find, however, that so much space has been taken for this first allegation of the President, that we must defer to our next the examination of his declaration that "draining, lime, and guano *dry up all vegetation.*" And, if we are not much mistaken, we will show, on high authority, that the money of the State of New York might be better employed, for the benefit of agriculture, than in publishing such opinions, to be distributed in the name of the American Institute, as premiums to promote excellence in that most important of all industrial pursuits. Nay, we will even venture to anticipate showing, on most reliable authority, that, *as applied to the State of New York*, "draining" has been considered not only one of the most important means of improvement yet discovered, but that it may even be relied upon, strange as it may seem to some minds, as a happy means, during summer drought, of affording not "hard" but soft "consolation" to "*flocks lowing for drink,*" and we suppose we may add, with equal propriety of expression, to *herds bleating* for the same consolation.

After all, we can hardly banish the suspicion that this high official anathema against *draining, lime, and guano*, was but a rhetorical expedient—a *ruse* of the orator to divert the minds of his audience, then listening to the sixth oration on that single occasion, all published by the State, to be distributed, not by the State's Agricultural Society, but in the name of the American Institute! May he not have thrown in these agricultural paradoxes, as the great English dramatist was wont to relieve his bloodiest tragedies, by the introduction of light and comical characters? Thus in King John we have the bastard Falconbridge; the witches in Macbeth; in Hamlet, Polonius and the grave-diggers; and in Othello, the follies of Roderigo, &c.

We shall see in our next what is said of the virtue of draining, lime, and guano, in the State of New York, by gentlemen who loom largely in the proceedings and in the estimation of the Institute, as well as of others who deservedly stand high in public confidence on every account. We are not of the category of those who think it right, because it may be most politic, to contradict no body and to criticise nothing that is said. We even deem it, in fact, most truly respectful towards those who utter them, to combat what we believe to be pernicious errors; and the more weighty the character, and the higher the position of the author, the greater the obligation to expose what we look upon not merely as fallacious, but mischievous and hurtful to the great interest of which we hold ourselves to be a sincere but most humble advocate.

Nor, it may be added, do we feel ourselves any the less called upon to contest the validity of this official repudiation of *draining*, as applicable to New York, that it was a flat contradiction and derision of an opinion we had expressed, as published by the New York Farmers' Club, (somewhat at random, it is true, as to the extent,) that, in the State of New York, there is more land which might be profitably drained, if the owners had the means, than would equal half the area of the State of Rhode Island. To that opinion, thus contradicted and treated as absurd, we still substantially adhere, and, we shall see what New Yorkers say, whose judgments are admitted to be entitled to some respect.

From "The Mother's Journal."

A MOTHER'S LETTER TO HER DAUGHTER, ON HER SEVENTH BIRTHDAY.

To which is now added, for the "*Plough, the Loom, and the Anvil*," a Postscript from the Grandfather.

"Good morning to you, my little girl; so you have attained the age of *six years*. Oh, dear! how old you are getting. Well, my love, I most sincerely wish you many happy returns of this long-wished for day; but in order to have one happy day, something must be accomplished. 'What is it, mamma,' do you say? I will tell you. There are two personages that my little Elize frequently invites to stay with her, and as they are very promising, and Elize to them is very yielding, they often make long stays, to the great annoyance of others who are real friends, and would be glad to do any thing that would promote her happiness; but they are so disgusted with the conduct of the other two, and displeased with the preference that my little girl gives them, that I am afraid these, her best friends, will leave her altogether to the prey of those, her professed friends, but really bitter enemies, who wish to make her look old and haggard, and, oh, shocking! No more.

"The names of these persons are Miss Fretful and Miss Self; the former of these I wish you to discard entirely; you have no further need of her services; the latter must remain with you, but I wish you to keep her in her proper sphere.—You must master her, or she will master you; and if you allow her to have the upper hand, you may not expect any more happy birthdays.

"The friends whom you would do well to encourage, are Miss Good-nature and Miss Cheerfulness; these will always remain with you if properly treated and encouraged; but if slighted they will retire; yet so obliging and kind are they that they are always ready to return on the slightest invitation. One word more, my child, and I have done. Make the Bible your constant study and delight, and follow the example of that Mary, who sat at the Master's feet. That you may be made the subject of His grace, and honour Him, living and dying, prays your affectionate mother."

Just as the good mother had finished the above, and, with a smile of maternal love and satisfaction at the thought of what the daughter would say to it, was about folding it for the mail, Grandfather T. happened to come in, and having read it with every sign of approval, took up the pen to add a postscript—(a rare omission, it must be allowed, in a lady's letter;) and thus the old

gentleman prolonged the letter of advice to his little grand-daughter:

"P. S.—Being allowed, my dear grand-daughter, to fill a blank page in your mother's letter, let me also advise you that there are several other companions with whom I would recommend you to cultivate a friendly acquaintance—to some it will answer as well to introduce you at a more advanced age, and of that, God willing, I shall be mindful: for the present, let me name two, for whom you have already indicated a predilection, and from whom I trust never to see you separated. The name of one is Miss Modesty, sometimes mistaken for a near relative called Diffidence, but, on closer acquaintance, found to be not exactly the same. The other young lady whose companionship I would have you cultivate with earnestness, bears the name of Miss Neatness. These maidens are twin sisters, and never quarrel about any thing. Miss Neatness is sometimes confounded with one to whom she bears no resemblance or affinity, called *Finery*.—I would have you carefully distinguish between the two; for although there may be nothing positively objectionable to Miss Finery of herself, when Miss Neatness is present, yet, in her absence, she always becomes disagreeable, if not disgusting. But to return, more exclusively, to the two young ladies whom I commend to you as your inseparable companions. Miss Modesty you will see shrink instinctively from every thing that is indelicate or unseemly, in thought, word, or deed; and shun, in a way to forbid all approach to intimacy, (and as far as possible, all associations with) companions, young or old, who are not of her own feeling and disposition. Far from using herself, even in moments of relaxation and retirement, in the company of her own sex, words of double meaning, that may admit of innuendo construction, even allusions the least unchaste or indelicate affront her sense of propriety, and teach her to avoid all familiar intercourse with those who indulge in them. You will never see her, even in forgetful playfulness, with her most intimate companions, commit any unseemly exposure of her person; and still she is full of animation and gaiety; but well does Miss Modesty know how to distinguish gaiety of temper from freedom and

licentiousness of manner and conversation. Let me advise you, then, to cultivate and live with her on terms of constant intimacy. Let your admiration of her be not a matter of policy, but become a part of your nature.

"Miss Modesty and Miss Neatness, as I before said, are twin sisters. For the latter, too, it has gratified me to see that you have already evinced a decided partiality. Unlike her for whom she is sometimes taken—Miss Finery—Neatness ever looks clean and stainless, even though she be habited in the cheapest materials of woman's dress. You will see her hair always nicely combed, and her shoes, stockings, handkerchief, dress, and all, as clean as clean can be. Night or day, sleeping or waking, she is ever prepared to undergo the test to which the celebrated John Randolph once told me he subjected every man when he wanted to know if he was a gentleman in his habits. 'In such case,' said he, 'I always look at *his finger nails*: if they are unclean, I go no further in my inquiries on that point.' Now, although that may be a test somewhat too hard for all gentlemen in the country, it is one to which every young lady should be willing to submit. As for being caught even in her breakfast-table deshable, with her hair unconbed, her shoes slipshod, a hole in or a speck on her stocking, or a soiled kerchief or apron, the very thought of such a thing would do violence alike to

her habits, and to what I may almost call her innate sense of what is becoming. Thus, my dear little grand-daughter, dismissing at once, according to the judicious advice of your ever-vigilant and affectionate mother, that ugly companion, Miss Fretful, who has been sometimes seen in your company, and holding Miss Self under strict check and control, both of whom are too apt to contract an intimacy with the children in the nursery, and to follow them for years, if not for life, after they leave it—just as the brightest and purest steel will contract rust when neglected—following your dear mother's advice in these respects, and seeking always the society of Misses Modesty and Neatness, (and some others, who shall be described hereafter, and whom it is time enough to know when you are more advanced in life,) I shall feel well assured of your safety. With the prudence and piety of your mother and grandmothers to guide, and your father's knowledge and fine sense of honour to instruct you, you will enjoy every chance that can be reasonably hoped for, to go, under the blessing of Providence, through life, with honour and happiness. Finally, my dear grand-daughter, let me exhort you to live and to act constantly as if your great ambition were to have Truth come along with her immortal pencil to write on your tombstone, '*Many daughters have done virtuously, but thou excellest them all.*'

"July 24, 1849.

T."

A MODEL WOMAN.

WE have many accounts of model machines, but here is a model woman. She need not be ashamed to see her name in print, and it ought to be known. It takes from the account all air of romance, and sobers it down to the reality of life, making the example more practical and effectual. However, there can be no doubt of the truth of the narrative. It is one of Mr. Samuel Allen's rough notes by the way, that serve to enrich the pages of "The American Agriculturist."

The account does not say how much the farmer's wife in the country borrowed from the husband owner in town, at the "first go off," until his farm was sufficiently improved to support itself:—

"I learned from a gentleman and his lady, in New Jersey, where I stopped to spend a short time last summer, the following interesting fact:—While doing business in the city of New York, in 1836," said he,

"my wife said to me, one day, instead of travelling in the summer, why not buy a farm, and let me cultivate it, and you come out when your business will permit?" He took her at her word, bought a farm of 140 acres, and moved upon it. It being entirely exhausted, not yielding hay sufficient to keep a horse and cow, he commenced making manure by hauling muck and other material into the barn-yard, sowed oats, buckwheat, and clover, in separate fields, and ploughed them under. He then spread lime upon some fields, and potash upon others, until his crop of grass was sufficient to keep a good stock of cows, and a team sufficient for the purposes of the farm. This enabled him to enrich his land, still keeping up the mucking system, of collecting every other material calculated to augment the quantity and absorb the liquid of the stable and barn-yard—pondrette, bone-dust, and guano, not being in use at that time.

He did not boast of having raised so large crops as some of your subscribers; but that they were respectably so, is evident, as he raised upwards of 1300 bushels of ears of corn from 15 acres, in a single year.

"In 1844, eight years after purchasing this farm, his grass brought standing, in the field, in the month of June, from \$12-50 to \$18-75 per acre, and the farm sold for more than one-third over its original cost, with very little improvement either in fences or buildings. The price of land, however, was considerably lower than at the time he purchased, the advance being wholly in consideration of the high state of cultivation of the soil.

"Much of the success in this farming operation may be attributed to the management of the good lady, in the absence of her husband. The way she served out the corned beef, bacon, and greens, to the hired men, cannot find a parallel. Her father was a wealthy merchant, in Philadelphia, and owned a farm in the neighbourhood. After leaving her boarding-school, she went with the family to spend the summer, at the farm, where she found a woman highly recommended who had been engaged to make the butter for the season. On going down to the milk-house, a quarter of a mile from the dwelling, she there found the milk-room literally sprinkled with cream, and the churn and milk-pans musty. She ran back to the house, just in time to see her father before he started for Philadelphia, and said to him, as he was getting into his carriage, "This

butter-maker will never do for us. Just come down and see for yourself." Down he went, and on beholding the condition of his dairy, his ire was kindled, and he said, "My dear child, what shall we do?" "Why," said the daughter, "take the woman into the carriage back to the city, and let me make the butter." The action followed the word. With a coloured boy to do the churning, and a little girl to assist, she made from June to the first of October, upwards of 900 pounds of butter, which was sold as fast as made, at a store in the neighbourhood, at 25 cents per pound, besides using milk, butter, and cream, in the family, and occasionally sending a roll to a friend. There were nine cows, one of which was farrow and another a two-year-old heifer. Had there not been something attractive about this spring-house, this young lady would never have had her attention directed to making butter. Suffice it to say, it was a stone building, in which was a spring of cold water, pouring into a stone trough, well cemented, and turning round three sides of the room, wherein the pans were set for raising the cream. Near by, was a wooden building with a copper boiler and every convenience for cleaning pails, pans, churn, &c., under an immense large black oak, with its broad dark-green leaves overshadowing the whole, and keeping the atmosphere cool in the hottest days of summer.

"SAMUEL ALLEN.

"*Morristown, N. J., May, 1849.*"

THE MOLE.

Tread softly, that the blind mole may not
Hear a foot fall, *we now are near his cell.*—SHAKS.

THE mole-hills which we see in the fields and meadows are thrown up by the mole, probably during its search for food. Little was known of the natural history of this animal, till a French naturalist, M. St.-Hilaire, published lately some interesting particulars respecting it. The mole forms several underground passages; and the way she proceeds in doing this is as follows:—she first makes a *run* in various directions, by undermining the ground, and unites this and several others at one point, making, however, some of them larger than the others. M. St.-Hilaire says that she finishes by arranging them with the most perfect symmetry, plastering the sides with great care; and when completed, it may be called her *encampment*. In the centre of these works she establishes herself, and appropriates a separate place to the reception of her young,

which is in some respects differently constructed from her own. In order to render the respective habitations which she and her young occupy not liable to be injured by the rain, she makes them almost even with the ground, and higher up than the runs, which serve as drains, or channels, to carry off the water. She makes choice of the place of her abode with the greatest care, sometimes constructing it at the foot of a wall, or near a hedge or a tree, where it has the less chance of being broken in. This abode is sometimes protected by having a quantity of earth thrown over it, especially in light soils, where I have seen a mound almost large enough to fill a wheelbarrow. Sometimes, however, no earth is thrown up over the habitation. This precaution of the mole is very necessary, to prevent the places she has chosen for retreats for herself and her young from being trampled in. When a mole has occasion to make her run through

a gateway, I have observed that she generally carries it as near as possible to the gate-post, where it is less likely to be injured. Some runs are so near the surface, that I have seen the ground crack during the animal's progress in working them. The bed for the young is composed of the blades of wheat, with which the mole forms a sort of mattress. Four hundred and two of them were counted in one nest, and all so fresh in their appearance, that they had been probably collected by this little animal in the course of two or three days. This shows not only her extraordinary industry, but the great depredation she must commit.

The mole is never known to work for food near the place which she has fixed upon for her abode. She labours to procure it about two hours in the morning, and as many in the evening, and then returns to her home or resting-place, which is so constructed that she is instantly made aware of any danger. This effect is produced by forming the upper runs in a sort of circle, so as to communicate a vibration when any thing passes over them. The mole then takes alarm, and escapes by one of her *safety* runs.

The mole is not often seen on the surface of the earth. I once, however, caught one, and turned it loose upon a lawn, the turf of which was on a bed of strong gravel, and particularly hard and dry. Notwithstanding these disadvantages, the mole contrived to bury itself almost in an instant, working into the earth by means of her snout and fins (for they can hardly be called feet) so fast that the ground seemed to yield to her mere pressure.

The power of smelling in the mole is very acute; and it is supposed that this sense serves to direct her in the search of her food. She hunts after beetles and worms, which last she pursues eagerly, but not always successfully; for the earth-worm is aware of its danger, and quick in escaping from it. Her search for prey taking place in the morning and evening, when birds are more generally feeding, must be the means of contributing greatly to their subsistence by driving worms to the surface of the earth, and furnishes another striking proof that the "fowls of the air" have their food provided by an almighty and superintending Providence in a variety of ways.

Le Court, who assisted M. St-Hilaire in his observations, and who appears to have been a sort of philosophical mole-catcher, was surprised when the naturalist expressed a doubt as to the mole seeing. He informed him that, in swimming rivers, they habitually guide themselves by their sight; but, in order to satisfy M. St-Hilaire on this

point, he contrived the following experiment with him:—They made two openings in a dry tiled drain, at one of which several moles were successively introduced. Le Court took his stand at the other. If he stood quite still, the mole soon came out and escaped; but if, at the moment in which she showed herself at the hole, he moved only his thumb, she stopped and turned back. By repeating this as often as she re-appeared, the mole was kept imprisoned in the drain.

There has been a very general idea amongst our mole-catchers, that if the smallest drop of blood is taken from a mole, it occasions instant death. Le Court seems to account for this opinion in speaking of the fights which take place between the male moles, by saying, that if one is ever so slightly wounded in a vein near the ear, the wound is mortal.

In order to ascertain the rate at which a mole moved, he put in practice the following curious experiment:—He placed some slight sticks, with little flags at the top of them, in the run of a mole, which he had previously ascertained to be of considerable length, and along which the mole passed and repassed four times a day in search of food. These sticks were placed at certain intervals in the run, so that if the mole touched them, the flag would instantly show it. He then introduced a horn at one extremity of the run, and blowing it loudly, frightened the animal; and she then went along the run at such a rate, moving the flags in her passage, that Le Court and his friends, who were stationed at intervals to assist in the observation, considered that she went as fast as a horse could trot at its greatest speed.

Hunger in the mole is thought to be a more violent feeling than fear; and its appetite is singularly voracious. If it sees a bird near, it quits its hole—approaches as if to attack it; and if the bird pecks it, the mole retires towards its hole, and tempts the bird to follow. She then watches her opportunity—darts upon it—seizes it by the belly, which she tears open, assisting herself for this purpose with her *flaps*, and, thrusting her head into it, devours it. She drinks as greedily as she eats. The mole does not, like the mouse, lay up a store of food, but preys on worms and various kinds of insects: she will also eat frogs, but will not touch a toad, if ever so hungry. A mole was tried with eggs and oysters, but refused to eat either. They will, however, eat fruit, and, Buffon says, acorns. If two moles are shut up together without food, the strongest will devour the weakest, even to the bones: nothing but the skin is left, which they never

eat, and which, when one has killed the other, is always seen to be ripped up along the belly. It was found that ten or twelve hours was the longest time they could live without food. This fact seems to prove that the mole is not torpid in frosty weather, which Linnæus asserted she was. It is known that, in such seasons, worms, ants, and the larvæ of cockchafers and beetles, penetrate deep into the ground. It is probable, therefore, that the runs of the mole are regulated, as to their depth, by the habits of the grubs on which she feeds. One would suppose, from the texture of its fur, which is particularly short and thick, that this animal is not very susceptible of cold. Its whole formation is admirably adapted to its mode of life.

It has been said that the mole, when the ground which it frequents is flooded, will climb up trees. This, however, I doubt, as I have seen it swim with perfect ease.

I lose no opportunities of conversing with mole-catchers whenever I meet with them in my walks and rides. They are a singular class of men—what may be termed *characters*—with a considerable share of low wit and a sly, cunning look, slow and deliberate in all their movements, and oracular in speech. They acquire a silent and stealthy walk, from the success of their operations depending on their not giving the alarm to the little animal they want to entrap. I also observe that they are generally much bent, from the constant habit they have of stooping to look for the runs of the mole. They are, however, possessed of much acuteness, and a small fee now and then makes them tolerably communicative. The rat-catcher is a very different kind of person. There is frequently an impudent, saucy kind of look about him, which seems to partake of the character of the animal he destroys. His very dogs are afraid of him, and they appear sulky and half-starved. His conversation is generally in praise of his dogs and ferrets, and the number of rats he has destroyed with them. He is a great frequenter of the alehouse, and a great conveyer of scandal from one village to another during the progress of his calling. My friends the mole-catchers, on the contrary, are a quiet and sober race of men, fond of accumulating money, and are seldom to be met with in an alehouse. Their cottages are generally neat and clean, and the implements of their calling tidily bestowed in them, such as two or three spades, a bundle of tough hazels, and some wooden traps. In an evening they may be seen twisting their horsehair nooses, or cutting a hazel stick to its proper length. One of these men showed me, a

short time since, a white, or rather a cream-coloured mole, which he had caught near the Robin Hood Gate in Richmond Park. He told me "there were five of them, but that some *young chaps* had stolen the others." He had it stuffed, and seemed to set much store upon it. He has since brought me a gray mole, with an orange-coloured belly, and assures me that he once caught one that was perfectly orange, except the head; but it was too much decayed before he took it out of the trap, to be fit for preserving. These variations in the colour of the mole are extraordinary, and I have never yet seen them noticed by any one who has published remarks on this animal. There is a great variety of soil in Richmond Park, but the moles are most abundant in those parts of it which are loamy. Here the moles are invariably black, but others of a different colour have been taken in the wetter and more boggy parts, where there is a substratum of white sand. Whether this circumstance, or the difference in the sort of food in these places, may influence the colour of the mole, I know not.

I observe that when a mole has its run up to the side of a hard gravelled road, it carries it a considerable depth under the road, and then comes nearer the surface immediately on the other side of it. This instinctive property of finding the exact spot where to begin again its usual depth of run is curious, and saves the animal much trouble.

During a particular season the male mole makes what mole-catchers call the rutting-angles. These are much larger than the usual runs, and must cause the animal considerable labour. They are about five inches wide and four inches deep, and are as near the surface as possible. The female goes a month with her young, and has never more than six nor less than two at a birth. The young moles begin to run in about five weeks, and when they first start are about three parts grown. They follow their mother for some time during their search for food, and it would appear that they are not easily induced to quit her. A mole-catcher informed me that he was once taking a female mole out of a trap in which she had been caught some time, and found five young ones clinging about her, none of which made any attempt to escape. One of these men told me that previously to the setting in of winter the mole prepares a sort of basin, forming it in a bed of clay, which will hold about a quart. In this basin a great quantity of worms are deposited, and in order to prevent their escape they are partly mutilated, but not so much as to kill them. On these worms the moles feed during the

winter months.* He also informed me that he finds these basins in less number some years than others, and when this is the case he always knows that the winter will be a mild one. This circumstance, and the deposit of mutilated worms, shows the powerful instinct which the mole possesses. They are very pugnacious, and at particular seasons four or five males may be seen fighting together on the surface of the earth, having quitted their runs for that purpose. When this is the case, one or two are generally left dead.

That moles were intended to be beneficial to mankind, there can, I think, be no doubt. I have been assured that where old mole-hills are most abundant on sheep pastures, the latter animal is generally in a healthy state, as it feeds on the wild thyme, and other salubrious herbs, which grow on these heaps of earth. Where these have been levelled and cleared away, sheep are not found to thrive as well as they did previously. This fact was confirmed to me by the Ettrick Shepherd, who deprecated the practice of removing mole-hills. On the fine and extensive pastures in Leicestershire, where old mole-hills are extremely abun-

dant, sheep thrive well, and are generally healthy: and I have been assured that after the mole-hills had been destroyed in a park which belonged to the Earl of Essex, in Herefordshire, the deer in it never thrived.

An observant person has assured me, that so great is the punctuality of the mole in commencing its morning and evening movements during the summer months, that he never knew them vary in their time.

It is a curious and extraordinary fact, that moles are nowhere to be found in Ireland. One would think that the soil was particularly well suited for their operations, as I have frequently observed them to be most numerous in boggy soils; at least this was the case in some peat-earth in Staffordshire, where they were exceedingly numerous, and made larger hillocks than I have seen in any other place. Dead birds and mice have sometimes been found in the nest of the mole.

In Herefordshire they are called munts, from their raising perhaps little mounds or hills; and, in Nottinghamshire, &c., *mouldi-warps*,† from the manner in which they use their hand-like fins, warping, or throwing off the mould on each side of them.

GENERAL MAXIMS.

THE principles of virtue should be early instilled into the minds of the young. They should be taught to reverence their parents, respect their superiors, and entertain the most sacred regard for truth. The propriety and the duty, as well as the necessity of regulating their temper and deportment, should also very early be impressed upon their minds, for on this depends much of the comfort of their future lives.

Never receive a favour but what you intend to pay back. In conferring one, do it without desiring a return. Grant with a good grace; and if obliged to refuse, let it be with gentleness and regret.

To judge of things by the event is unjust. When all that reason, prudence, or wisdom suggests, has been done, a man can have no bad reflections, even if he fail of success. Many actions which are censured when they do not succeed, would have been commended, had the result happened to have been the reverse.

It is a true saying that "Pride has ruined thousands, but indolence tens of thousands."

To be happy in the marriage state, it is only necessary that the married couple

should overlook the faults, and study to understand the tempers, of each other.

To live at peace with others, we ought to be consistent with ourselves. And to be consistent with ourselves, we ought to live at peace with others.

They who promise in haste, generally perform at leisure. The making a promise includes an obligation to perform it. To deceive people with illusory pretensions or hope is essentially dishonest: yet there are many who, from a feeling of vanity, are induced to promise what they are never able, and what perhaps they never intend, to fulfil. Better never promise, than promise and never perform.

It requires much tact to proportion your expenditure to your income. Economy is a science, which, if well understood, may lead, on small means, to respectability and even affluence. Keep always in view that you may never recover indiscreet expense, and that extravagance, which is always followed by repentance, is frequently punished by the very want it occasions. Happy is he who can obey the apostle's injunction, to "owe no man any thing."

* This fact seems to disprove the assertion of Linnaeus, that the mole passes the winter in a state of torpidity.

† Mouldiwarps is evidently the German word Maulwurf.

All excess is censurable in itself, and because it leads to greater excess. In the eyes of the world, wealth, like charity, covers a multitude of sins, and adds a new lustre to merit. To gain wealth, it is necessary to avoid all useless expense, and to pursue industry, frugality, and economy. Nevertheless, it is not your money that will render you respectable, but the use you make of it.

Strive to be seasonable in all things. Never waste time if you can avoid it; but let every hour be diligently improved. To the poor man, whose bread depends upon his labour, time is invaluable; and the man of genius has often no other estate.

Let your thoughts always be profitably employed, as the means of keeping foolish ideas out of your head.

Let scrupulous attention be paid to the order and arrangement both of your time and avocations. Jeremy Taylor, in his "Holy Living," says—"Avoid idleness, and fill up all the spaces of thy time with severe and useful employment."

To allow all affronts to pass unnoticed would be pusillanimity, and an encouragement to insult, especially from persons of mean ideas, or sordid education, or purse-proud feelings; but to be always squabbling is no proof of courage.

Envious people bring themselves down to the level to which they endeavour to humble others. The most preposterous feature of envy is that the prosperity of those whom they call their friends often excites in envious minds nothing but mortification. "A man's enemies," says an old moralist, "are not always created from his vices, but sometimes from his virtues." Envy of good qualities engenders more ill-will than reprobation of bad.

An error is more easily forgiven than the attempt to justify it by evasive excuses. It is better, surely, candidly to confess one's faults, than be guilty of telling lies to conceal them.

Selfishness or conceit often prevents us from doing justice to ourselves—envy or prejudice, from being willing to acknowledge the merit of others.

All men should do all men justice, without hesitation or scruple.

Lord Chatham, who was almost as remarkable for his manners as for his eloquence and public spirit, has defined good breeding to be—"Benevolence in trifles, or the preference of others to ourselves in the little daily occurrences of life."

"Good manners," says Locke, "are the blossom of good sense, and it may be added, of good feeling too; for, if the law of kindness be written in the heart, it will lead to

that disinterestedness in little as well as great things—that desire to oblige, and attention to the gratification of others, which is the foundation of good manners."

To avoid extravagance, it is not necessary to go to the opposite extreme: mean thrift and profuse expenditure equally betray a narrow and vulgar mind.

Change of fortune to the better often changes manners to the worse.

Ignorant persons, like children, admire most what they cannot comprehend.

An inordinate love of pleasure is the ruin of individuals, as luxury is the bane of civilized society.

The deficiencies of education are not easily remedied. They often, in after-life, cause a change in the disposition or the habits—making gaiety degenerate into dulness, and a social temper have recourse for relief to dissipation.

We ought to be as judicious in our amusements as in our studies. When properly regulated, the former will improve the morals and refine the manners, as the latter have a tendency to enlighten the intellect and inform the mind.

He who is ashamed of his calling is ashamed of that by which he not only procures the means of subsistence, but by which he obtains character and respect. If any man, therefore, should endeavour to cast contempt on your profession, regard it not: the attempt is more disgraceful to him than it is to you.

Lose no opportunity of improving the mind, and cherish a taste for reading, which presents charms of an enduring nature—though to be useful it ought to be diversified. Cultivate the moral and religious sentiments; and, above every mere worldly consideration, possess a scrupulous regard for truth and the higher duties of life.

Never be inquisitive as to the conduct of others, nor be over-suspicious of their motives. It was one of the few good regulations of the celebrated Beau Nash, of Bath, "that all whisperers of lies and scandal be taken for their authors."

One may converse freely with the casual acquaintances he may meet with while travelling; but nobody would dream of making such persons confidants and friends. The journey of life is longer.

People are very apt to imagine they see precisely what they wish to see. In illustration of this willing illusion, a French author tells the following story:—"A country clergyman and a lady went forth to view the moon, having heard that it was inhabited, and were looking for the inhabitants through their telescopes. 'If I am not mistaken,' said the lady, 'I perceive two sha-

dows: they mutually incline towards each other; doubtless they are two happy lovers! 'Oh fie! madam,' said the clergyman, 'these two shadows are two steeples of a cathedral!' On the earth, as in the moon," continues the illustration, "different pas-

sions will cause us to see either lovers or steeples!"

"Do as you ought to do, whatever be the result," is a maxim that ought to be acted upon, under all circumstances, and upon all occasions, without regard to consequences.

THE SQUIRREL.

Dear is my little native vale,
The ring-dove builds and warbles there;
Close by my cot she tells her tale,
To every passing villager:
The *squirrel* leaps from tree to tree,
And shells his nuts at liberty.—ROGERS.

WHILE fishing in the beautiful grounds of Pain's Hill, near Cobham, I have had frequent opportunities of watching the habits of squirrels, which are there in great numbers. These amusing animals generally make their nests on the branch of a tree, and appear to give the preference to the fir. In forming the nest, they begin by gathering mouthfuls of dry bent grass, in the way we see rabbits do, and of this grass they make a considerable deposit. The outside is afterwards protected with a quantity of sticks, giving the nest, or *drey*, as it is called, the appearance of a bird's nest. When the young are ready to be deposited, the female squirrel scratches off her fur in the manner of the rabbit, so that its stomach is sometimes quite bare. This circumstance however enables the helpless young to find the teats more readily, thus answering a double purpose, affording them at the same time warmth, and removing the obstruction to their receiving nourishment. The squirrel has from four to five young ones. These when very young, have an odd appearance, in consequence of the shortness of their tails, which do not arrive at the full size for some time. The young ones are easily reared, and soon learn to take milk out of a spoon, and become very tame and familiar. In a wild state the female shows considerable coyness, and when pursued by the male will drop from great heights from one branch to another. They make deposits of food, chiefly acorns, in holes of

trees. I never, however, could hear of a drey having been found in such a situation, but generally on the branches, where I saw several about half-way up the tree. I have, however, seen one on the very top of a young fir tree. Squirrels vary in colour, some having more white about them than others, and sometimes the tail is gray.

They are much delighted with the fruit of coniferous trees, such as the pine, the fir, the larch. They also feed on the birch, and probably the alder. They not only devour the cones of the Scotch fir, but also bark large boughs, and gnaw off the tops of the leading shoots, so that the trees are much injured by these mischievous little quadrupeds, which are too subtle and too active to be easily taken or destroyed. They feed also on small birds. In cutting down some trees on an estate at Petersham, the axe was applied to the root of a tall tree, on the top of which was a squirrel's nest, and a rope was fastened to the tree for the purpose of pulling it down more expeditiously. The workmen cut at the roots, the rope was pulled, the tree swayed backwards and forwards and at last fell. During all these operations a female squirrel never attempted to desert her new-born young, but remained with them in the nest. When the tree fell down, she was thrown out of her nest, was secured unhurt, and put into a cage with her young ones. She suckled them for a short time, but refused to eat. Her maternal affection, however, remained to the last moment of her life, and she died in the act of affording all the nourishment in her power to her offspring.

Recipe for potting Charr and Trout.—(We doubt not it would answer well for *herring*.)

The following are the ingredients required in order to pot 8 pounds of fish:—

3	teaspoons full of ground black pepper
3	" " Allspice
2	" " Mace
1	" " Cloves
1	" " Nutmeg
$\frac{1}{2}$	" " Cayenne

Keep these carefully corked up in a small phial, and add, when employing them, a little salt. Cut open the fish and clean well

with a dry cloth. Remove the heads, tails, and fins, along with the back bones. This done, apply the mixture, transferring them, as you do so, to a baking dish. Cover well with fresh butter, and place the dish in a slow oven, allowing it to remain there until the bones of the fish become dissolved; drain off the butter over them. Trout treated in this manner ought to be sea-fleshed and not to exceed three quarters of a pound in weight. If well selected and in good season, they will be found not a whit inferior to the best charr.

The Plough, the Loom, and the Anvil.

VOL. II.

OCTOBER, 1849.

No. IV.

HEAR BOTH SIDES.—No. III.

—, *South Carolina, May 15, 1849.*

* * * WITH the eminently scientific character of your "Farmers' Library and Journal" I was much pleased, and have carefully preserved the numbers for binding. Published in the region of the North, it was not to be expected that its practical details would be so well suited to the planter of the South. The Northern farmer may furnish him with many useful hints, particularly in domestic economy; but the scientific features of "The Library and Journal" rendered it emphatically of universal value. And to supply the deficiency in practical details suited to my planting operations, I looked to "The Southern Cultivator," published in Georgia.

When you supplanted "The Library and Journal" by "The Plough, the Loom, and the Anvil," I was induced, by a personal acquaintance with you of pleasant recollection, and by a high respect for you as a veteran in the service of agriculture, to give your new effort a trial. The proximity of the plough, the loom, and the anvil, I thought important and desirable for the sake of diversifying labour, and the *mutual* aid the respective pursuits would contribute. Even in our Southern States best adapted to planting, there will be a considerable portion of the population, from bodily infirmities, distaste for the employment, and occupancy of unproductive lands, yet abounding in water-power, timber, and other advantages, who cannot pursue agriculture successfully. The diversity of labour which such circumstances would naturally promote, to the advantage of this portion of the population, is important in subserving the interests and fuller development of agricultural resources. But if these advantages are not the result of natural circumstances in a natural way, but are to depend upon an artificial propulsion, for which agriculture is to be taxed, then it is to be feared, that even in fertile planting regions, where it has attained to so high a degree of success without such aid, agriculture will become only the incident. Just as it has occurred, my much respected sir, in your conduct of "The Plough, the Loom, and the Anvil." You have, indeed, delusively to yourself and your agricultural friends, placed the plough at the *head* of the catalogue; but *that* is its chief prominence. For the experience of a year has opened our eyes to see the loom not only central in position, but how dexterously you are bringing the *plough* as well as the anvil to its aid. Without the plough and the loom there would be little need of the anvil, and it will naturally take its place along side of each. So would the *loom*, seeking the material for its operations from the plough, naturally take place by its side. It presents an inviting argument to the enterprising. But the exigencies of regions where agriculture is not so remunerating has demanded the loom, and the argument has been unheeded, and will be, till over-production drives the planter to the consideration of this and the other argument suggested at the outset for the diversity of labour. That period has at length arrived, and will bring about the desired result without any unnatural stimulus. I have visited the most flourishing manufacturing towns and villas at the North, and no similar scene exhibited to my mind more forcibly the externals of prosperity than was presented in my visit to Graniteville, in this State, the other day. The extensive factory building of granite, the comfortable and tasteful houses for the operatives, the neat church edifices, &c., all so well and spaciouly arranged on streets set out with trees, was indeed beautiful. Correctness of character, and industry, are indispensable qualifications in the operatives; and education is provided for the children of families engaged about the factory. Indeed flourishing factories are springing up in various portions of this and other Southern States. Here is your problem working itself out naturally to a profitable and successful issue, *without* the tariff of 1842. The plough, the loom, and the anvil, are dwelling peaceably and profitably together as coadjutors and friends. Would you turn one of them into a blood-leech, and disturb the present tranquillity? I will not dwell upon the injus

tice of taxing the plough—for it amounts to that—to protect other branches of industry; which policy you are sustaining under the delusive idea of its associating the plough, the loom, and the anvil, to the ultimate advantage of the plough. I cannot believe that you are an enemy in disguise, when you have done and sacrificed so much to evince your honest attachment to the plough. You will find, however, that the mass of your Southern agricultural friends consider your views mistaken—as infringing upon natural justice and constitutional rights—injurious to the great cause you advocate, and an impediment in the way of the agreeable and successful association of the plough, the loom, and the anvil. It is to be regretted that you sought to promote so desirable an end by the avowal and advocacy, in your journal, of the principle of protection. However free you are to entertain your political opinions, it was unnecessary to render your course obnoxious to any branch of your friends, especially in the department of agriculture to which you are principally attached, by giving your journal a political complexion. You were aware of the contrariety of views on the disputed point. And it would seem much more consistent with the design of your journal, had you confined your course to information in the science and practice of the respective departments. But you have undertaken through it to promote a political principle, which is held by many not only of doubtful policy, but a political heresy.

Your course, however, is adopted, and I judge from your last number, will be persisted in. I do not presume to hope to swerve you from it, and you will excuse me with these views I respectfully present, for declining to be any longer a subscriber to your journal. Please stop sending to me after the present volume, “The Plough, the Loom, and the Anvil.”

Yours, very respectfully,

We know not how we can more fully manifest our entire confidence in the truth of our doctrines, than by laying before our readers the arguments of those who are induced, whether by political calculation, or by honest difference of opinion, to furnish us, either publicly or privately, with criticisms upon the lesson we have undertaken to teach, viz.: that the farmers and planters must open their eyes to the fact that they have been and are being impoverished, and their lands are becoming exhausted, because of sending from the land all the products of the land; and that if they would prosper, they can do so only by aid of measures calculated to bring together the plough, the loom, and the anvil, now unnaturally separated.

We have on hand several letters from our Southern friends, declining to continue their subscriptions, and containing views somewhat similar to the one above given, and would gladly publish the whole of them, with our comments thereon, but the very limited space that can be appropriated to the discussion of such subjects, prevents our adoption of that course. We now select this one, because we regard it as the best in point of argument, and because its very friendly character will be proof to our readers that it is the product of an honest difference of opinion, and therefore, unlike some others, not to be charged to political calculation. It is always to us a matter of exceeding regret to lose a reader like the author of this letter. We say reader, not subscriber, for though dependent upon, and therefore anxious for, the success of this journal, our first desire is that of disseminating sound information, that we believe must conduce to the prosperity of that great farming and planting interest with which we have been so long and so closely connected.

Not less is it a matter of surprise that such men should voluntarily close the door to information that might enable them to review, and thus either correct or confirm the views they have hitherto entertained. If what we have to say carries with it no conviction of its truth, it can do no harm to them or others, but must, on the contrary, in their estimation, do good, by confirming them in the belief hitherto entertained, that the more they can send from the land, returning to it none of the refuse of its products, the richer they will grow. Why, then, should they not read? Why not “hear both sides?” Why limit themselves to the perusal of *The Union*,

and the letters of *Bundelcund*, and the Patent-office Reports, and the Reports of the late Secretary? To them, those papers and documents can convey no information, as they merely repeat what must have been known before.

Were all men to follow the course of the friend who writes this letter—were all to discontinue reading books so soon as they discovered that they contained new ideas in religion or morals, in physical or economical science—or that the writer entertained views different from their own—what chance would there be of human improvement? It has been well said by an eminent writer of our own time, that

“Every one must of course think his own opinions right; for if he thought them wrong, they would no longer be his opinions: but” that “there is a wide difference between regarding ourselves as infallible, and being firmly convinced of the truth of our creed. When,” he says, “a man reflects on any particular doctrine, he may be impressed with a thorough conviction of the improbability, or even impossibility of its being false: and so he may feel in regard to all his other opinions when he makes them objects of separate contemplation. And yet, when he views them in the aggregate, when he reflects that not a single being on the earth holds collectively the same, when he looks at the past history and present state of mankind, and observes the various creeds of different ages and nations, the peculiar modes of thinking of sects, and bodies, and individuals, the notions once firmly held which have been exploded, the prejudices once universally prevalent which have been removed, and the endless controversies which have distracted those who have made it the business of their lives to arrive at the truth; and when he further dwells on the consideration, that many of these his fellow-creatures have had a conviction of the justness of their respective sentiments equal to his own, he cannot help the obvious inference, that in his own opinions it is next to impossible that there is not an admixture of error; that there is an infinitely greater probability of his being wrong in some than right in all.”*

Our course is, and shall be, in direct accordance with these views. We seek not victory, but *truth*. We read the arguments of our opponents, and we weigh them, and what is more, we print them, and so shall we continue to do. Let our opponents offer us sound arguments—such arguments as should convince us that we are wrong—and our error shall be instantly acknowledged. We invite discussion. We state facts whose existence is undeniable, and yet totally incompatible with the truth of the doctrine that teaches our planters to exhaust their land in producing cotton to be sent abroad, when they might enrich their land and themselves by surrounding themselves with a great consuming population, engaged in the conversion of cotton into cloth, and we ask an explanation of them, yet in vain is it asked. In reply, we receive a mere repetition of assertions, and the reason that such is the case, is, that the men to whom we have referred, and who have set themselves up for the great politico-economical teachers of the nation, have no knowledge of the subject but that which they have drawn from books, and are entirely unable to furnish an explanation of a fact unless they can find it in those books. They rely on their memory for their arguments, and as a necessary consequence are generally obliged to resort to their imagination for their facts. They are blind guides, and the sooner our agricultural friends shall determine to see for themselves, hear for themselves, and think for themselves, the sooner will they relieve themselves from the necessity of resorting to combinations for diminution in the product of cotton, replacing it with food, *at a moment when we are assured that our present surplus of food is so infinitely great that had we the supplying of all the consumers of England, it would not be sufficient for its absorption*. Really, when we look at these things passing around us, we are amazed that there does not arise among our planting friends an universal

* Essay on the Publication of Opinions, Section V.

conviction that there is something wrong, and an universal desire to endeavour to know what that something is, accompanied by a determination to "hear both sides," and then judge for themselves, instead of blindly following in the track of men as fallible as themselves, many of whom have proved their fallibility by their advocacy of extreme opinions on both sides of the same question, at no very distant periods of time.

Our correspondent admits that South Carolina has labour power that is unemployed, and that must so remain for want of diversity of employment, and that she has water-powers that are unemployed, which, if employed, would bring the labour power into action; but he thinks that if that employment is to be brought about by "artificial propulsion," agriculture may be taxed for the support of the labourers. But is not agriculture now so taxed? These people eat and drink, and consume clothing, and occupy buildings intended to shield them from the weather, and *somebody* finds them all these things. They cost the community, while doing nothing, precisely the same as if they worked; and they now produce nothing in return, whereas they would then produce something.

He thinks, however, that employment for surplus men and women, and children, and water-power, and rich soils, will come of itself, and without artificial aid, and points to "Graniteville" in support of this view of the case. We also point to "Graniteville" as evidence of what might, and would long since have been done, and of what would not now have been done, but for the total failure of the free-trade system which preceded and led to the adoption of the tariff of 1842. To that tariff is the existence of that village due, and what have been its effects in producing a demand for labour that before was waste, and thus enabling men and women and children to become better customers to the farmer and planter—the producers of food and of the materials of clothing—may be seen by the following passage, which we take from a very interesting letter on Southern manufactures, in "The New York Herald:"

"The effect of the erection of this manufactory in the neighbourhood, is almost magical. Hundreds have found employment among the poor of the white inhabitants, who were, before, almost destitute. A Methodist and a Baptist church have been erected. A free school has been opened, and about 70 pupils attend. There is a large and convenient hotel, where I am writing this letter. The town is laid out in streets, and already over 80 dwelling-houses, very neat and comfortable, with gardens attached, have been put up, which rent from \$16 to \$25 per annum. The girls in the factory are, some of them, very pretty, and are well dressed; and, from what I can learn, the change in their appearance is extraordinary. The superintendent, Mr. George Kelly, who came out here and placed the factory in operation, went with me through the manufactory and town. He informed me that he only brought with him four or five experienced persons from the North—all the rest in the factory, about 300, men, women, and children, are from the Sand Hills and immediate vicinity, where they, one year ago, were earning nothing. They make now from four to five dollars, (males,) females from three to four dollars, and children one to two dollars per week. Some of the girls, who are now well dressed and appear very intelligent, a year ago were at work in the field, hoeing corn, or ploughing with a horse; others were idle; now they reside in comfortable boarding-houses, where they pay \$1.50 per week for board, and can lay up money. Their education is attended to, and they are on the road to become useful and productive citizens. In fact, since Christmas, over forty marriages have taken place between the young male and female operatives in the factory. They were brought together in it, became attached, and got married. In such a case, the wife generally leaves the factory to attend to the house-keeping arrangements of the new couple, and the husband continues in the factory, which gives them an independent support."

No one who reads this can doubt that the moral and physical condition of the people is improved, and that the State is enriched and strengthened by the existence of this admirable establishment. Why, then, does it stand

alone? Why are there not such in every county of the State? Is it for want of population? Certainly not. There are tens of thousands of poor white people who have scarcely been able to obtain employment sufficient to give them the poorest subsistence: and tens of thousands of slaves, unable to work in the field, who are a burden to their owners, while hundreds of thousands of whites and blacks have left the State, often abandoning their land because unable to sell it, all of whom might have remained at home, clearing and cultivating the rich lands that are yet untouched, had not South Carolina so absolutely repudiated the doctrine that leads to the consumption on the land of the products of the land. Has it been for want of capital? Certainly not. The people of that State were among the largest stockholders in the Bank of the United States. *They sent capital abroad in search of employment that was denied to it at home.* The *Charleston News* tells us that even now, when the planters have for so long a time been selling their products at little more than the cost of production:—

“Much larger aggregate amounts of capital lie dormant in the hands of their possessors, in rural districts, than is imagined. Let” (says the editor) “the inducement be once presented, and the combination of capital would be no more difficult than the combination of labour. Here, then, would be presented the true field for philanthropic labours. A white population that is scattered, uninformed, devoid of material comforts, may be concentrated, instructed, taught to estimate at its due value regular employment, if there is not a taste imparted for some of the luxuries of life, and even an elevation given to the standard of enjoyment, physical and intellectual. The arts of manufacture, when they come, as they must come, to be associated with the mechanic arts, their handmaids, will enlarge the sources, almost indefinitely, of stable and profitable occupation. We contend that for every one hundred white persons that we can put into a factory, we proportionably augment the riches of the State, without subtracting one iota from its agricultural resources, besides reclaiming from the waste of moral darkness those who have minds to be illuminated and principles to be fixed.”

The reason why these things have not long since been done, has been that they could not be done. During a long period, there has been a constant oscillation, backwards and forwards, between protection and free trade, attended with ruin to almost all who endeavoured to bring the consumer to take his place by the side of the producer, and *it has not been until now, after so many years of experience, that the protective system has been so fully established as to have it admitted by free trade advocates, that a revenue duty means thirty per cent., and nothing less.* The South Carolinian has a duty of thirty per cent., which he deems sufficiently protective, and that duty having been established by his free-trade friends, he thinks it likely to be permanent, and *therefore he builds a factory*, and this he calls the triumph of free trade! Abolish the duty to-morrow, and establish free trade with Europe, and the factory would disappear, for the market would at once be crowded with cheap and worthless clothing, that must be sold, and the manufacturer would find no demand for his products.

This, however, is but one of the consequences that would result from such a course of action. Whence came the improved machinery of Graniteville, and whence the skill to manage it? From New England. And how got it there? England prohibited the export of machinery and of artisans, that she might *compel* her colonies and the nations of the world to send to her their raw materials, and thus enable her to tax them at her pleasure, and the people of New England were compelled to *smuggle* out both artisans and machinery, that they might commence the work of manufacture. So did the nations of Europe. They and we then became manufacturers of machinery, and thus compelled England to permit the free exportation of men and machinery. Once commenced, the New Englanders went forward of themselves, and now they produce the best machinery of the world

—the result of protection against the endless changes of British policy—and with that machinery they supply the people of South Carolina and Georgia. Abolish protection and establish perfect free trade—and if the doctrine of protection be not true, trade should be *absolutely* free—and the result will be to close every factory of New England, including those which furnish the machinery of which South Carolina now boasts. The men who now work in the machine shops and factories would then grow food, of which the surplus would increase, and the planter would then be forced to abandon food and return again to cotton, and as he would be unable to buy machinery, he would be deprived of every employment but the raising of that one staple, and his power to accumulate capital for the purchase of machinery, even if it could be had, would be effectually destroyed.

Of all the deceptions practised in this deceptive world, we know of none exceeding that which is found in the idea of a revenue tariff with incidental protection. The planter glorifies himself for his free-trade doctrines while abandoning the cultivation of cotton, because unprofitable, for the cultivation of sugar, that depends upon protection for its existence. He insists that protection diminishes the value of his property, when it is well known that its present value is maintained exclusively by the demand for the production of sugar, a protected article. He denies the value of a home market for his products, when the abolition of protection would annihilate the cultivation of sugar that is used in the home market alone, and compel the labour now employed in that direction, to be turned to cotton, to his own utter ruin. He points to Graniteville, and desires that we should see in it the results of free trade, while enjoying a protection of thirty per cent.

The Canadian, ruined by free trade with England, asks of the farmer of Illinois to permit him to send his wheat to New York, that he may enjoy the advantage resulting from protection, but the Illinoisian refuses to permit him to share with him the domestic market, while all the time shouting free trade. Now, why should the Illinoisian object to the admission of Canadian products? He is assured by *The Union* that our surplus of food is so great that all the artisans of England could not consume it, and that but for the great foreign demand it would rot on our hands, and must, of course, know that the price here, if this statement is correct, must be always below that to be obtained in "the great grain market of the world." The Canadian can send his food to England as cheaply by the St. Lawrence as by the New York canals, and even if he could not, he would never permit it to stop in New York when it could go to "the great market," and there command a higher price, and yet the Illinoisian will not consent to a reciprocal free trade. Nevertheless, he *would* consent to annexation, by which perfect freedom of trade would be established. Now, why is this?

The reason is simple, although it may not enter directly into the calculation of those who oppose the Canadian project. Common sense (not that of the correspondent of *The Union*, but *real* common sense) teaches men the advantage of having consumers by the side of producers. The Canadians are all producers. They have no consumers, nor can they have while they have free trade with England, and they desire to seek among us that which they need. They see that the real support of the farmer—his customers for nearly all his immense products—are our own consumers and not those of Britain, and they wish a share of this great market, *while buying abroad the cloth and iron made with Polish food and Hindoo cotton*. The Illinoisian sees that while they would *sell* much here, they would *buy* little, and that the proceeds of their sales would go to the support of men who raised food abroad. With annexation, this state of things would not arise, because the protective system—so far as the existing one is protective

—would be established in Canada as well as here, and the consequence would be that she would expend here, in the purchase of articles produced by aid of Western food, a large portion of the proceeds of the Canadian food sold here.

We take the following from one of the papers of the day, quoted from the *Toronto Patriot* :

"Our tarination fix is more apparent here: for instance, wheat sells here for 3/6 a bushel—across the river, 5/3; while our people have to pay 25 per cent. more for groceries, the necessities of life, than on the other side."

The Canadian has free trade, but he desires to relinquish it. He may now send his wheat to "the great grain market" at a duty of a shilling a quarter, or 2½ cents per bushel, yet he seeks to be annexed to a country whose surplus is, *as we are told*, so great that all the consumers of England could make no market for it! We earnestly recommend this fact to the consideration of our friendly correspondent.

Annexation would thus be attended with advantage to both. The establishment of reciprocal intercourse, under existing circumstances, would be suicidal on the part of the farmers and planters of the Union, and yet if the doctrine of the last Report of the late Secretary be true, it is a measure to which no possible objection could be made. Nevertheless, the men who regard that document as "unanswered and unanswerable," and *profess* to believe in free trade, are opposed to it. It is time that the farmers and planters of the Union should understand that protection is their measure, intended for their benefit, and that they should abandon the idea of incidental protection, afforded by means of revenue tariffs having for their sole object that of enabling the people who manage the government to obtain the largest amount of taxes to be employed in the maintenance of fleets and armies, and in paying thousands of officers, whose services could be dispensed with, with infinite advantage to the nation.

In his last Report, the late Secretary informs us that :—

"As the high duties under the act of 1842 were rapidly substituting the domestic articles and excluding the foreign rival, the revenue must have declined. If, however," he continued, "the act of 1842 had yielded the average revenue received during the period of its actual operation, this we have seen would have been an annual loss of upwards of seven millions of dollars as compared with the average revenue of the tariff of 1846. With such a result, instead of a large surplus on the 30th of June, 1850, there would have been an addition of more than twenty-five millions of dollars to our national debt, which must have gone on rapidly increasing, requiring in time of peace new and larger loans to be negotiated."

The act of 1842 was rapidly substituting cloth and iron made with home-grown food and cotton, for cloth and iron made with Polish food and Hindoo cotton, yet the revenue did not decline; for the power of consuming foreign commodities increased with every day of its existence, *while we paid off much of our foreign debt*—whereas the revenue is now maintained solely because *we are contracting a vast foreign debt*, the interest of which will have to be paid until the day of repudiation shall come round again. With every year in the progress of the compromise bill, the debt of the nation grew larger, until it grew so large that the power to borrow disappeared, because we could no longer pay even the interest. With each and every year of the tariff of 1842, the debt of the nation grew smaller, because we absorbed the *free trade debt*. With each year of the tariff of 1846, the debt of the nation grows, and when it shall cease to grow—that is, when we shall have exhausted our credit—the revenue will fail, and then we shall have to diminish our expenditures, or again hawk the government loans throughout Europe in quest of purchasers. We beg the reader to compare

our facts with the assertions of the Secretary, and determine for himself on which side lies the truth.

We have just now met with a comparative view of the imports into New York in the first seven months of the three past years, by which the reader will be enabled to see for himself that our power of consuming foreign merchandise, *paid for with our products*, is diminishing, and rapidly diminishing :—

January, February, March, April, May, June, July.

1847	.	.	.	.	\$57,378,368
1848	.	.	.	.	53,352,887
1849	.	.	.	.	55,279,873
Duties collected	.	.	.	.	12,338,346
Same time in 1848	.	.	.	.	11,917,390

In the present year we have contracted a debt abroad amounting to *many millions*, yet the import into the chief city of the Union *is less by two millions of dollars* than in seven out of the first eight months that followed the repeal of the tariff of 1842. But for the exportation of evidences of debt, as in the years that preceded repudiation, the revenue would now be deficient many millions of dollars, and so will it be when the demand for capital in Europe shall cause the re-export of those evidences to our shores, to be paid for in specie that must then flow out, with what effect may be known to those who assisted at the last years of the compromise.

We advocate the cause of the farmers and planters of the Union against the demagogues whom they so often permit to govern them, and we should hail with pleasure any diminution of the revenue resulting from the substitution of domestic for foreign articles, but such is the wonderful growth of the power of consumption, when men and women and children are everywhere employed, the consumer taking his place by the side of the producer, that we fear we should look in vain to a diminution of revenue from the establishment of a system of thorough and complete protection. The more coarse goods are made at home, the more fine we can consume. The more we manufactured our own cottons and woollens, and iron, the more silks and laces, and tea and coffee, we could buy, and therefore it was that the revenue grew in amount with every day of the existence of the tariff of 1842, after having diminished almost to nothing with the last stage of the Compromise act.

By a large portion of the agricultural interest, the necessity of protection to their interests, as a means of making a market on the land for the products of the land, is fully understood; and it is time that they understood the power they possess, so fully as to enable them to put the matter on its proper footing. Protection—absolute and complete, and for the sake of protection—is either right or wrong. Free trade—absolute and complete—is either right or wrong. There is no medium. Incidental protection is a fraud, and should be repudiated. Let, then, those who believe that their interests require that the owners of looms and anvils should be required to come and take their places by the side of their ploughs and their harrows, insist upon the adoption of one course or the other, rejecting absolutely all protection except for the sake of protection, and the question will be speedily decided. There is not a professed free-trade man in the Union that if called upon to decide between the one or the other—as all should be required to do—that would not be found clinging to protection. With a Congress containing a majority professedly opposed to the principles of protection, it would, however, be difficult to have the question tried; because with all the violence of profession, there is not, as we believe, a single man that would venture to advocate entire free trade, and not one that would desire to be compelled to

make one of a majority that would adopt it, because perfectly certain that it would be political death to his party and himself. It is, however, entirely in the power of the people who are interested in the question to bring on a decision, by action out of Congress.

It is well known that the manufacture of cotton and woollen goods, and of iron, and the production of coal, have been ruinous to nearly all engaged in them for the last year, and that they are likely to continue so to be. It is equally well known that they are so, and are likely to be so, because of the action of that portion of the people who are engaged in the production of food, and cotton and wool, and in the consumption of cloth, and coal and iron.

It is also well known that the price of cotton, of wool, and of food, is now maintained altogether by the demand for the supply of the domestic market, and that if that demand were withdrawn, because of the closing of the mills and furnaces and mines of the Union, there would be an enormous fall in the price of raw materials, and a large advance in the price of all the articles required for consumption. Now, were the persons throughout the Union engaged in the work of converting the food and wool and fuel into cloth and iron, to come to a determination simultaneously to close their works, and to continue them closed until this question should be definitively arranged, a settlement would take place, and one that would never be disturbed until the expiration of the brief time that would then elapse before the consumer of food, ceasing to require protection, would be ready to unite in the abolition of all interference with the natural application of labour and capital.

The home consumption of cotton now exceeds 50,000 bales per month. Let that demand be stopped, and the price of cotton would fall at least one-half, while the price of cloth would be so far increased throughout the world, that the consumption would be diminished by one-third—and then the producer of cotton would be the first to solicit the consumer of food and of cotton to resume his operations.

The supply of coal to markets on the seaboard, is now 3,000,000 of tons, and the consumer of fuel obtains twice the comfort, at half the cost, while the farmer has his produce transported to market in half the time at one-third of the cost. To bring about these results has required an investment of \$60,000,000, and those who made the investment have been ruined. Let the producers of coal stop their works, and coal would be \$20 per ton, for the deficiency could not be supplied from abroad.

The producers of iron now furnish 800,000 tons. Were the furnaces blown out, *the whole exports of the Union would not pay for that quantity imported from abroad*—leaving out of view the cloth and fuel that would be required. Let the furnaces and rolling-mills be stopped, and the price of iron would at once be trebled.

The food required for the supply of those who are, directly or indirectly, employed in the production of fuel, of cloth, and of iron, amounts to more than \$100,000,000, and it is that demand which now fixes the price. Were it diminished even one-half, freights would rise to five shillings per barrel, while the price of flour would fall to two dollars and a half; for the direct effect would be a reduction in the price abroad, and thus the ship-owner and the manufacturer of England would be enriched, at the cost of those farmers and planters.

It is constantly assumed that the persons engaged in converting food and other raw materials into cloth and iron, are a set of mendicants, dependent on the charity of the producers of raw materials for support, whereas the fact is directly the reverse. The party most interested in the establishment of efficient and permanent protection is the owner of the land and the driver

of the plough, and it is on his part that the dependence exists. He cannot stop his machine. He *must* raise food or cotton. The men who raise coal and ore, and the men who make machinery, can do something else. They can go to work to raise food for themselves, ceasing to be consumers and becoming rivals. The power is in their hands, and were they once to determine to exercise it, the question would be settled at once and for ever. Let the plough and the harrow feel, even for a single month, the effect of the total withdrawal of the loom and the anvil, and their owners will never desire a repetition of the experiment. We should regret to see the necessity for such an experiment, but if by its aid the farmers and planters of the Union could be brought to a proper estimate of the advantages that must result to them from making a market on the land for all the products of the land—exporting cotton cloth instead of cotton, and importing the comforts and luxuries of life instead of the necessaries—it would do more to promote the happiness and comforts of the whole people—more to promote the improvement of agriculture—and more to promote the progress of physical, moral, intellectual, and political improvement, than any measure ever adopted in the world, from the creation to the present hour.

And why should not such a measure be adopted? There is to be settled a point of great importance to the welfare of the whole nation. The producers of food and cotton, and consumers of cloth and iron and fuel, insist that the consumers of food and producers of cloth and iron and fuel, are but a race of sturdy beggars, dependent on their bounty. This the latter deny, and assert that to their presence is due the prosperity of the former, and to prove the fact they say, we withdraw our services, and when you need us send for us. We are willing to convert your raw materials for you, or we will ourselves produce raw materials in competition with you. Determine for yourselves what shall be our mode of employment, and we will rest content. Could any objection be made to such a course of action? Can there be any doubt what would be the result? We think not. The fact that the real protection is on the part of the farmer and planter, would thus be settled for the country and for the world, and the whole world would then unite in the measures requisite for the destruction of the colonial system, which has, according to Lord Brougham, and other distinguished British authorities, the *smuggler* for its natural ally, and which has destroyed the comfort and happiness of the people of Ireland and India, of Canada and the West Indies, and of every other country subject to it. Trade might then become absolutely free, and custom-houses might then be closed, for the disturbing causes, now necessitating protection, would then be removed. Let our South Carolina friends, then, unite in the measures requisite for bringing about absolute freedom of trade, by repudiating incidental protection, adopting the policy of *protection for the sake of protection*.

Saw-dust as a Manure.—Henry H. Drummond, Esq., M. P., in a communication to the Highland Society, says, “I have for a number of years been in the practice of using saw-dust in agriculture. I keep it in composts for about three years, which time has appeared to me necessary for its proper decomposition. This process is greatly facilitated by mixing the saw-dust with lime in the proportion of about one-tenth part of lime, and the compost is much improved by the addition of road-scrappings, or earth of any sort that can be procured. The saw-dust heap is a convenient place of deposit for dead animals, which are thus disposed of to great advantage. A compost of this kind, which has been well mixed and decomposed, and turned over by the spade at proper times, will produce an excellent crop of turnips.”

THE VETCH, OR TARE.

LET IT BE FULLY AND FAIRLY TESTED.

WE have repeatedly remarked upon the difficulty of getting things imported for exhibition and trial, in the United States, such as experience has recommended to high favour in Europe and other countries. The annals of European agriculture make frequent mention of plants and machinery, with every promise of usefulness if imported, yet nobody—either individual or society—has the enterprise to send for and try them. This has not been entirely the case with the vetch, or tare, which enters extensively into the modern husbandry of England. It has been partially tried in our country, but who can say whether fully and fairly, and with what success?—and though it may have failed in one locality, does it follow that it should do so in all? On the contrary, there is good reason to believe that it would answer an admirable purpose, especially as calculated to supply much-needed links in a complete series of grasses or plants adapted to *soiling*, work-horses, and milch-cows, particularly near large cities.

There are several varieties of this plant, but the two chiefly relied on in England are the *winter* and the *spring* tare. The winter tares are best sowed with rye, the spring with oats. They are liable to change, like wheat—the winter into spring tares, if repeatedly sowed in spring—so spring wheat may be made of winter wheat. Tares or vetches, when used as green forage, are cut after the pods are formed, but long before the seeds are ripe. They are said to be exceedingly nutritious, and to supply a larger quantity of food for a limited period than almost any other forage crop, and, when cut early, will yield a second crop. All animals are fond of them, and thrive on them remarkably well; and it is said that cows give more butter when fed with tares than from any other food whatever. Horses, too, are said to thrive upon them better than upon clover, and the same is said as to fattening cattle, which fatten faster upon this article of green food than upon any other kind of grass or esculent in use in England. Hogs, too, it is asserted, may be fattened on tares alone; and if they make as good bacon as another of the leguminous family—the *North Carolina pea*—why then all we have to say is, that no one ever did or need to taste better.

In Ireland, the tare is cultivated to come in between the cuttings of clover, but in England it is often the principal resource for *soiling*, from May to November, being sometimes ready for the scythe before the clover. They sow it at different times through the spring—the first sowing coming in after the first crop of clover is all consumed or made into hay, and the successive spring sowing yields a supply of green food throughout the summer and autumn.

It is supposed that in all our large cities any thing of this kind might be ordered through regular and respectable seedsmen. Perhaps the Patent-office will import a small quantity of it and of other seeds of equal promise, and then issue, through members of Congress, brief directions for cultivation?

When intended to be cut green, for *soiling*, they are always sowed broadcast, at the rate of from $2\frac{1}{2}$ to 4 bushels to the acre. The crop is most profitable when cut as green food, in which case they should be sowed at different times, from the middle of March to the first of June; and when it is intended to save the seed for a subsequent sowing, the better way is to drill as much land as may be necessary for that purpose.

INFORMATION WANTED ON VARIOUS SUBJECTS.

NOT being prepared to answer, at the moment, several of the queries submitted in the following extract of a letter from a planter of high respectability in South Carolina, we deem it best in the mean time, and as auxiliary to the purposes of the writer, to throw it before our readers, and to solicit information. We are sorry to find in it evidence so conclusive of the unprofitableness of cotton culture generally in South Carolina. If the chivalrous and generous-hearted people of the Palmetto State, when they embarked largely in the culture of cotton, after the invention of Whitney's cotton-gin, had adopted and adhered to the policy of forcing the loom to come to the cotton, just as the mill is brought to the grain, instead of sending their thousands of bales thousands of miles to look for the looms, their richest lands would have been brought into play, their old lands recruited, their husbandry would have been diversified, their population increased, internal resources developed, railroads would have ramified the State, and have borne, before now, the riches of her mountains to the sea-board; but she chose to carry all her eggs in one basket, and to send that to distant markets, and here we see the result:—

Columbia, S. C., July 28, 1849.

J. S. SKINNER, Esq.—*Dear Sir:—*Being a subscriber to your periodical, "The Plough, the Loom, and the Anvil," and knowing the interest you take in agricultural matters in general, I take the liberty of writing to you to gain some information as to the usefulness of the reaping machine, sometimes used for cutting wheat, and whether it answers the purpose? How much it cuts in the day?—and what is the price? My lands are free from stumps and stones, and perfectly level. From what I have heard of them, I think they will save me a vast deal of labour. *I find that planting cotton in this State is no longer profitable; for after paying for bagging, rope, twine, freights, drayage, storage, insurance, and commission, the cotton selling for seven cents per lb., the bale amounts to \$24.50; deduct the expenses from the amount, leaves \$20.50, or nearly one dollar in every six—you see, a ruinous business. I have determined to give it up, and see if by planting grain I cannot do better.* I must, therefore, ask your advice as to the best wheat for a Southern sun, and what time to sow it. I have made inquiries of my neighbours who plant wheat for their own use, what quantity they make to the acre, and find their average to be about twelve bushels per acre; and they give me to understand that the rust is the only drawback that cannot be entirely avoided, and that partially, by planting so that the grain may mature in May. The smut, in olden time, injured the crops too, but by the use of blue-stone that is overcome. We have as yet no fly to contend with, but occasionally the chinch-bug. So I hope to see this part of our State, certainly on the river low grounds, a grain-planting country.

What two-horse plough is most thought of with you for breaking up land—and what is the price?

Will you be kind enough to let me know the number of glass factories at the North—where they get their potash, and how much they use, and what they pay for it?—for I think potashes can be made here to advantage. Also the value of pearlshashes, saleratus, and soda?

Yours, most respectfully,

J. V. S.

¶ Perhaps venders and inventors will, after a while, find out the advantage of availing themselves of our advertising sheet—provided for *their* convenience.—Ed. P. L. & A

THE ENGLISH COLONIAL SYSTEM.

It was the opinion of General Jackson, as expressed to Dr. Coleman, that we were too subservient, in our legislation, to the "policy of the British merchants." To enforce her colonial system on the world, and to compel the world to send her the raw materials to be manufactured, and the food to be eaten while they are being manufactured, (instead of leaving the world to consume its own food by its own manufacturers,) Great Britain maintains in commission, says the very discreet and well-informed correspondent of "The National Intelligencer," ships and armies as follows :

45 of from 1 to 10 guns	.	.	.	.	.	total guns	336
34 10 to 20 "	.	.	.	.	.	"	459
3 20 to 30 "	.	.	.	.	.	"	70
3 30 to 40 "	.	.	.	.	.	"	116
9 40 to 50 "	.	.	.	.	.	"	404
1 50 to 60 "	.	.	.	.	.	"	56
8 70 to 80 "	.	.	.	.	.	"	590
4 80 to 90 "	.	.	.	.	.	"	336
1 vessel mounting	.	.	.	.	.	"	92
1 ship "	.	.	.	.	.	"	101
1 " "	.	.	.	.	.	"	104
1 " "	.	.	.	.	.	"	110
2 ships of 120 guns each	.	.	.	.	.	"	240

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3014

20 tenders, schooners, brigs, &c.
 5 vessels on Arctic expedition, &c.
 2 Royal yachts.
 8 Dover and Falmouth packets.
 30 steamers, guns enumerated 151.
 32 " guns not enumerated.

The British army consists of:—

2 regiments of life guards.
 1 " royal horse guards.
 7 " dragoon guards.
 17 " cavalry, various lancers, hussars, &c.
 3 " grenadiers, Coldstream, and fusilliers.
 99 " foot infantry.
 1 " rifle brigade.
 9 colonial regiments.

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East India Company's service :—

	Cavalry.	Irregular cavalry.	Infantry.
Bengal	11	18	74
Madras	8		52
Bombay	3		29
	<u>22</u>	<u>18</u>	<u>155</u>

"It will be seen that the maintenance of the Company's power in Hindostan requires nearly two hundred regiments of their own troops, and at the present moment twenty-four regiments of the British army are also stationed there. The country must be valuable, in some sense or other, which requires such an immense force to keep it in subjection. It certainly is not so with the Company, in point of direct revenue; for, according to printed statements, there have not been more than three years out of the last twenty in which the expenditure has not exceeded the income.

"We scarcely know whether we could not run out the parallel in respect to almost all our colonies. It is certain that at present they afford employment to, or at least require the presence of, thirty-nine regiments of the British army."

Now the common notion is that we should keep up armies and navies, lest, some day or other, we may be brought into contact with England, and hence it is that the farmers and planters (in large proportion) have paid some five or six hundred millions of dollars since the last war with England, for our military establishments. The dictates of good sense and humanity would be to expend these hundreds of millions for the construction of the means of intercommunication, and more especially for the establishment, in each State, of schools wherein the course of instruction should be as exactly adapted to the use of the plough and the harrow—to civil engineering—draining—chemical and geological knowledge—animal and vegetable physiology—as exactly as that at West Point as to the use of the implements of blood and slaughter—and the day is coming, slowly, but still it is coming, when the *people will have it so*.

BRING THE CONSUMER NEAR THE PRODUCER.

"THE expenditure of ten millions of dollars in placing the consumer of food by the producer of cotton and food, would double the power of the South."—*Carey's "Past, Present, and Future."*

Ten millions of dollars invested in cotton mills on the Lower Ohio, where coal and food are cheap, would result in the immediate increase of the home cotton market of at least eighty millions of pounds, or 200,000 bales, and would make a new home market for food of at least half a million of dollars a year.

This would be but the beginning of the process of home concentration of capital and population for manufacturing purposes. In a few years, the ten millions, thus employed, would be doubled and probably quadrupled. It would be here, as it has been in England, in Belgium, and in New England; the manufacturers, here as there, would accumulate with rapidity, and lands and the product of lands would, here as there, rapidly appreciate.

Let the farmers remember that, when the market is far away, they or their factors must send the surplus produce to the market, and that, when the market is near, the consumer or his factor will come to their doors to purchase.

Good land near Lowell is worth two to five hundred dollars the acre; near Manchester the price is still greater; and its average value in the manufacturing section of Belgium is about three hundred dollars an acre.

The Middlesex farmer sells his beef at from twelve to sixteen cents a pound, and his potatoes at eighty or ninety cents a bushel. Shall our farmers be content to send their beeves to the Brighton market and pay out two-thirds of the proceeds of their sales in the expense of driving their beeves to Brighton?

The wife of the Middlesex farmer can exchange a pair of chickens, and at her own door, for eight yards of sheetings, while the wife of the Wabash farmer has to take her chickens to the nearest town and gets for them only two yards of sheetings.

The Lowell manufacturer makes large profits, and pays high wages, and in cash down at the close of every week or month; the men and women who get high wages can afford to pay high prices for what they eat; while the farmers who get high prices for what they have to sell can afford to pay high prices for land, or the use of land, and still spare enough to send their children to the best schools, and then aid them in commencing the business of life.

If we would keep up the wages of labour ; if we would make good roads ; if we would have good schools ; in short, if we would surround ourselves with all the conveniences and comforts of life, we *must* bring the consumer to the side of the producer.

SHEEP.—HOW THE BUYER IS TO KNOW IF THEY ARE HEALTHY.

SHEEP are so liable to various diseases, that much care is necessary on the part of the purchaser, especially when they are intended for breeding stock. As to the signs of unsoundness in sheep in the butchers' shambles, it would be almost needless to give any directions, for few purchase their own meat, and those who do, would not take the pains to learn how to judge. In towns, the market-money is usually given to servants, who take what good judges would reject.

In marketing, we have all our lives observed one rule—that is, to leave nothing of *its kind* behind better than that which we bring away. To be sure, an article may be of a price too long for the length of your purse, in which case it is easy to let it alone ; but rather get never so little of that which is the best of its kind, than buy that which is inferior *because it is cheap*.

As to mutton particularly, we are apt to be captivated by its grossness, rather than its juiciness and tenderness—hence a Dishly, all fat and no flavour, will sell more readily than a well-flavoured, juicy Southdown. But our present business is with the signs of health in sheep intended for breeding-stock. The appearances of soundness and vigour of constitution are, a lively briskness of temper : a brilliant clearness of the eye : a florid, ruddy colour on the inside of the eyelids, nostrils, and gums : fastness in the teeth : a sweet, fragrant breath : dryness of the nose and eyes : the breathing easy and regular : coolness in the feet : dung properly formed : fleece firmly attached to the skin, and unbroken : and the skin exhibiting a florid, red appearance.

Now, reader, will this go in at one ear and out at the other, or will you examine your own sheep, and be guided by these directions in purchasing. Are our signs true ?—if not, wherein are they not ?

The preference for fat meat in England is not to be wondered at, because there generally the hard-labouring husband eats the flesh, while all that is left for wife and children is the gravy yielded by the fat, to season their bread and vegetables. Hence it is that there nothing but fat meat will sell in the market.

Food of Plants.—Humus, which contains ulmic acid, and possesses many of its most important properties, is the true food of plants as obtained from soil, and there are many facts which lead to the conclusion, that it reaches the plant in combination with ammonia. Now we have every reason to believe that it is from this ammonia that plants derive their nitrogen ; and that they will receive sufficient in this way is proved by the fact that in no plant does the nitrogen amount to one-twelfth of the carbon, which is the proportion in which they exist in ultimate of ammonia. Ultimate of ammonia is a constant *result of putrefaction* both in the animal and vegetable kingdom.

SOME STATISTICS OF OHIO.

WE have the pleasure to acknowledge the receipt, as well from Mr. Bateman, the Secretary, as from Governor Trimble, the President of the Ohio State Agricultural Society, of a copy of the "*Third Annual Report of the Board of Agriculture*" of that strapping member of our great sisterhood of free Republics. But who can wonder at the growth of the young giantess, when we consider the extent of her range, the quality of her soil, and the fat things, besides buck-eyes, she has to ride and feed upon, as here exhibited in this report:—

		Value.	Average value per capita, about
Horses over two years	492,509	\$16,856,841	\$34.25
Mules over one year	2,098	78,955	37.67
Cattle over two years	983,822	9,729,929	9.88
Sheep over six months	3,577,171	1,988,316	0.54
Hogs " "	1,879,689	1,879,689	1
Total of domestic animals over a certain age	6,835,289	30,533,230	

So, with a population in 1840, of 1,519,467, every man, woman, and child within her borders may be set down as a "*whole hog man*," with something to spare; nearly one bullock apiece, and more than two sheep; and then, for riding, if they are not too proud to ride double, every soul of them may go on the back of a horse or a mule to meeting on Sunday. What a glorious country! No wonder Father Mathew wishes he could pick up all Ireland, as you would a potato, and put them down in the United States. What a transition it would be! From the refuse potatoes, and starving for want of them, to more hog and hominy, and apples and pumpkins, than any man knows what to do with! How can any nation become civilized whose mind and labours are tied down to a simple root, involving no mystery—requiring no art for its production or cookery? Poor creatures, whose utmost hopes and ambition are limited to as many roots as will keep soul and body together! Do not people in such a condition cease to become free and moral agents, subject to the moral responsibilities that attach to freedom and abundance? Assuredly we have much to account for as a nation, if "to whom much is given, of him will much be required."

Above all things, should prosperous nations be held accountable as such, to God, for any wanton breach of the peace of the world, thus plunging into that foul current, which, as it rises in, so it tends to profligacy, cruelty, and barbarism. But what have farmers to do with the social condition of things, and the causes and consequences of war? Does any thing concern them except how to make a peck more of corn or a pound more of cheese?—and besides, is it not clear that the more wretched the labourers of Europe, the cheaper is their labour to aristocratic capitalists, and the products of their labour to us? Are we to be taxed, says the "free trade" man, to ensure to American operatives higher wages than their labour would command abroad? No, certainly not. Let us buy our cloth and our iron of Mother England, where men labour for not quite enough to keep from starving—then we may be sure of starving the man at the loom and the anvil in our own country; and what then? Why then we shall be left in unqualified dependence on their products abroad, and those at home who would gladly labour at the loom and the anvil, and eat on the seaboard the cattle and the corn of Ohio, will be driven to Ohio to raise corn and cattle for themselves—and then what will Mr. Laughter say, who, according to friend Bateman, makes $140\frac{1}{2}$ bushels of corn to the acre, on eleven acres? Why, we guess

he will laugh on the other side of his mouth, as will not all those, if they succeed, who are for separating the loom and the anvil from the plough and the harrow—looking to and depending on the *foreign instead of the home market*? And thus it is seen at last, that the planter and the farmer have something to do with the question of protection and free trade—and that from Irish potatoes may be extracted something of political and moral philosophy, as well as Irish whisky.

A GREAT BREED OF SHEEP.

"At his sheep-shearing, a few days ago," says the Winchester Virginian, "Col. Josiah W. Ware, near Berryville, Clarke county, Virginia, took from one of his Cotswolds the enormous quantity of eighteen and three-fourths pounds of wool. Some of the staple we are told measured sixteen inches in length."—*Pennsylvania Inquirer*, June 8, 1849.

We do not know, but we presume the above was the growth of more than one year—probably of a yearling last spring. Col. Ware, like Major Reybold, and others, has for years been doing much to improve the breed of sheep, for wool and mutton.

At the Cattle Show at Baltimore, last autumn, Col. Ware added much to the exhibition in this department of domestic animals. The home-bred ewes shown by him on that occasion, were all thorough-bred Cotswolds, and had not been fed on grain or any thing else, except what grass they could gather in a very poor pasture, until within a few days of leaving home. The home-bred ram was a yearling, (perhaps the one sheared as above,) was with the ewes, received the same treatment, and had been with 80 ewes. Before they left home, the lightest ewe weighed more than 200 lbs. His wethers had not been fed except a few days before leaving home, and were on the same pasture—notwithstanding which, the lightest weighed more than 210 lbs., and they were sent home to be fattened, though high offers were made for them.

Of his imported sheep, all three were got by the ram that took the *high prize* at the great fair at Northampton, held by the Royal Agricultural Society, and were out of *prize ewes*, and the two ewes were part of the pen which last year took the highest prize at the Royal Agricultural Fair at York, in England: they were just landed, had been more than fifty days at sea, and confined more than sixty days. They were all yearlings, their purchase was not limited, and their cost was high.

Will such expense and public spirit meet with their just reward in our country? That is the question. We sincerely hope all such patriotic enterprises may.

A Profitable Sheep.—Seymour Aldrich, a farmer of the town of Hopewell, in this county, on the 8th inst., sheared twelve pounds of clean, fine wool, from a Paular Merino Buck. The wool had a growth of less than one year, the sheep having been sheared the 26th day of June last. Who can beat that?—*Canandaigua Repository*.

Railroad Iron.—The *Chambersburg Whig* states the cost of the rails about to be laid on the Cumberland Valley road will be \$250,000, for which a preferred lien is to be given on the earnings of the road. They are brought from abroad.

Who says we are not more useful to England than if we were *avowedly* an English colony?

ON THE FOOD OF PLANTS.

BY DR. BALDWIN.

THE analogy existing between animal and vegetable life, is too striking to have escaped the observation of any one who has paid the slightest attention to the subject. It is, indeed, truly wonderful to observe how manifest it is throughout, from the highest to the lowest orders of the animal and vegetable kingdoms. Heat, light, air, and water, appear to be equally indispensable to the existence of both, in quantities differing very materially, according to the natural constitutions of each individual species, but manifestly essential to all, for neither plants nor animals can exist for any length of time if totally deprived of any one of them. Food is indispensable to vegetable as well as to animal life; in this respect, also, the analogy is very apparent, some species of each requiring an abundant supply of the richest food, and others consuming so small a quantity as almost to induce the belief that they exist without it. Yet for all those plants and animals which interest the agriculturist, it is very obvious that food is absolutely essential. A beneficent Providence has made an abundant natural provision in milk, for man, and the young of those animals which appear to be more especially destined for his comfort and support, and it is not reasonable to believe that He has neglected to make a suitable provision for the vegetable creation upon which animal life so essentially depends. It has occurred to me that a careful observation of the facts connected with, and essential to the growth of all plants, would tend more to elucidate the mystery of their aliment than the many theoretical speculations which this subject has already elicited. The experience of every practical farmer teaches him that he cannot expect to mature a crop of any kind in an exhausted soil, but if he manure it, that is, if he place in it a sufficient quantity of any substance, animal, vegetable, or mineral, which has been previously subjected to the putrefactive fermentation, he has it then prepared to yield him a crop, not of one kind only, but of any and every kind which he may desire to cultivate. By successive crops of any one kind he may again exhaust it, and this he can effect much sooner by some crops than by others. He is not ignorant of the fact that some plants appear to have a peculiar affinity for some of the neutral salts, which promote their growth in a remarkable manner, yet he knows that these salts are not the *aliment* of those plants, for they will not cause them to exist in an exhausted soil. And he has yet to learn that any substance whatsoever, animal, vegetable, or mineral, will enable him to raise a crop of any kind in an impoverished soil, except those substances which have been previously subjected to putrefaction, or which are capable of speedily undergoing that process. These familiar facts appear to me to demonstrate clearly that there is but one aliment for all plants, to wit, the residue of putrefaction, which is consumed by them in different quantities, according to the natural appetites of each particular species, but indispensable to every one, for if deprived of it they inevitably perish, however plentifully supplied they may be with every other essential. The labours of those learned chemists, who have recently directed their attention to agriculture appear to me to be as futile as those of their predecessors in former ages in search of the philosopher's stone, by which they expected to transmute the baser metals into gold. If the analyses of the bodies of young animals would satisfactorily demonstrate that they had existed solely upon milk, what practical advantage would result? Can the chemist teach the farmer to make milk?—or teach him the process by which he may be ena-

bled to separate any one of its constituents, which would prove to be a cheaper or a better nutriment than that so bountifully supplied by nature? And this appears to me to be precisely the case with respect to the food of plants: no chemist will ever be able by analysis to separate the fertilizing principle from it, or make it in any other manner than that ordained by Providence, namely, by the putrefactive process. That the earth itself is capable of being converted into the food of plants is a proposition so plainly proved by facts, so constantly before the observation of every practical farmer, that I cannot help being surprised that any one should entertain a doubt upon the subject. Under *any and every substance* which has covered its surface for some time, the earth is always found to have acquired great fertility. Many ingenious theories emanating from learned and scientific men, in almost every age and country, have been suggested to account for the fertility of the earth, and to demonstrate the precise nature of the food of plants. The only one, however, which appears to have received the approbation of agriculturists of the present day, is that which attributes all the fertility found in the earth to the decay of vegetable matters upon it or in it, and defines the pabulum of plants to be a peculiar fertilizing principle termed humus, always contained in the product of that decomposition. That this theory is entirely erroneous, I believe, for reasons which I shall now assign:—1st. Vegetable substances decomposing upon the surface of the earth are unfavourably located for the generation of the putrefactive process, by being exposed to all those causes most inimical to it, to wit, heat, light, and a free circulation of air. 2d. The residue of eremacausis or slow combustion, (that kind of decomposition which all substances appear to undergo when unfavourably located for putrefaction,) *is not manure*—"woody fibre in a state of decay" always proving pernicious to vegetation of almost every kind. 3d. The trifling quantity of the residue, even if it were the best of all manures, would not account for the great fertility imparted to the earth by the decomposition of vegetable matters upon it, as is exemplified under the leaves in the forests, and under clover or straw. 4th. There is no greater degree of fertility imparted by substances which are decomposed than is always produced by substances incapable of decomposition. Vegetable substances, when ploughed under and permitted to decompose, will undergo the putrefactive process, provided they have previously been saturated with water, or by the addition of alkalies, or hot manure, for reasons which require but a slight knowledge of chemistry to understand. That they do not undergo that process under ordinary circumstances, is plainly manifest.

1st. Because vegetable matters, when ploughed under, are unfavourably located for putrefaction, by being deprived of a contact with air which is admitted to be essential to that process. 2d. It contradicts the experience of every practical farmer, that the cleaner a field is of all vegetation when fallowed, the more certain it is to produce a good crop. 3d. No fertility can be imparted to the soil, by ploughing under green crops of any kind, or by leaves, straw, clover-hay, or weeds, if they be spread immediately before ploughing. 4th. The fertility which is always imparted to the earth by a luxuriant growth of clover, is not in the slightest degree diminished by the removal of the whole crop previous to fallowing. I have been induced to ascribe the fertility of the soil to shade and shade only, for reasons which follow. 1st. That shade is indispensable to the generation of the putrefactive process in all substances. 2d. That the surface of the earth when densely shaded, is located precisely in that situation most favourable to the generation of the putrefactive process, namely, in a close, cool, dark, damp location, with a slight contact of air. 3d. The appearance of the earth in-

dicates that it has undergone a chemical change, for it is changed in colour, consistence, and fertilizing qualities. 4th. The natural renovation of worn-out lands, and the great fertility of forest lands, cannot be accounted for by any other principle. 5th. That the fertility imparted to the soil depends solely upon the density and duration of the shade, without regard to the quality of the covering substance. 6th. That large quantities of the richest mould, which is known to be the best food of plants, have been found in locations where vegetation never could have existed. 7th. That the fertility imparted by the growth of some vegetable matters upon the surface of the earth, is not increased by ploughing them under, or diminished by their previous removal. Much importance has been given to ammonia as an aliment of plants by many agriculturists, in consequence, I presume, of the fact that it is always generated and evolved from *all substances* during the putrefactive fermentation, even from the earth itself, according to "Thaer's Principles of Agriculture," page 148: "When kneaded clay is exposed for a considerable period in large masses, and in a damp situation, it assumes all the characters of putrefaction. Ammonia is then formed in it, thus proving the presence of nitrogen, which is a constituent portion of ammonia." I am not apprized of any facts which demonstrate satisfactorily that ammonia, or any one of its salts, carbonate, nitrate, muriate, or phosphate, is the aliment of plants, when separate from those substances which generate them. And from all the observations I have been able to make, I feel confident in the assertion that the fertilizing virtues of manures are not volatile substances. Although shade is indispensable to the production of the putrefactive process, and the more dense the shade the more valuable the manure, yet after that process has been perfected and the manure formed, no exposure to the weather diminishes its fertilizing qualities in the slightest degree. Even after years of exposure, although lessened in bulk very considerably, it will not be found to have been deprived of a single particle of its fertilizing principles. Nor can the earth be exhausted of its fertility by tillage, and exposure to the summer's sun or winter's frosts; nor in any other manner than by the growth of plants which consume it.

BANKS WANTED.

YES, in Maryland, Virginia, and all the Southern States, nothing stands more in the way of agricultural improvement than the difficulty of raising money on real estate, for the improvement of landed property. Were it not for this, thousands of industrious men, who have been taught by agricultural journals, how sure is the process of improvement, find it yet impossible even to *begin*, for want of as much money as would buy 1000 bushels of lime; although it could be made morally certain that the use of it would, in a certain process of time, enable them to return the loan, and to prepare the land to which the lime was applied, capable of yielding 50 bushels of corn instead of 15, or 25 bushels of wheat instead of 5 bushels to the acre, with the same amount of labour.

The use of money in agriculture answers the same purpose that *steam-power* does in manufactures. It gives efficiency to labour, and life to a *caput mortuum* or dead body—and this is one of the secrets why towns grow large in the Southern States, while the country goes to waste; and villages dwindle away, until they disappear altogether, after lingering through an existence always miserable when in a state of conscious decline.

In New England, where the loom and the anvil are everywhere at work close to the plough, they order things differently. There, every hundred

or district has its little bank, where the small farmer and the small tradesman or mechanic, if known to be industrious, can borrow what is needed to *give him a start*.

A gentleman was lately travelling in Connecticut, and, halting at a place where there was the kernel of a town, to wit, a hotel, a store, and a blacksmith's-shop, he inquired the use of a fourth little edifice, which the landlord informed him was *a bank*! "Ah, yes," said the traveller, "one of those banks, so-called, as I suppose, in which the vault for safe keeping the basis of circulation, is an old flour barrel!"

"There, sir," said the landlord, "you are labouring under a gross mistake. We have, a little way back here from the road, a small water-power, and factory; and this bank, of which the capital is \$50,000, is the savings-bank of the operatives, and of the whole neighbourhood around; and from it any industrious farmer or mechanic can borrow \$200 or \$300, or \$400 or \$500, or \$600, or even \$1000, as he may need it, to carry on any promising improvement, or extension of his premises or business. The depositors and stockholders are numerous, but none have a large amount at stake. They are content with a small but certain interest on their investment, as long as they know it is in safe custody—the bank being made to give a lift to deserving people of industrious habits and middling circumstances, instead of supplying fine houses and large salaries to a few officers. It is conducted at a very trifling expense, so that the interest on loans is nearly a net income."

"Ah, sir," said the Southern traveller, "I begin now to see how it is that your country is so thriving—houses and fences all in good order, with well-pruned and fruitful orchards and gardens. Your people have but little land, but then they have consumers *near at hand*, working at the loom and the anvil to demand what they make on the spot where it is made: and banks at hand made up of the earnings of all, to be loaned out to give activity to genius and employment to labour.

"In the South, from which I come, our policy has been to keep the loom and the anvil, the hatter and the shoemaker, and the plough-maker, at a distance from the plough and the harrow, and thus it is that almost every man's capital, who has any capital at all, consists in *land* exclusively, of which many have 500 acres, who cannot for their lives borrow \$500, nor \$200, to buy lime or guano. They are in the condition that a man would be, who, having but \$20,000, should lay it all out in the *hull of a great ship*, leaving himself destitute of money or credit to buy even sails or rigging, let alone the means to lay in a cargo and hire seamen."

Now here, reader, you have an outline of the difference in the condition of the South, which goes dead against, and the North, which goes for "encouragement and protection" of *American industry*. When this great question of questions was first raised—a question which above all people most concerns the farmer and planter—the South went *for*, and the North *against* protection. The North thought it might operate to abridge their commercial enterprise, for which they possessed peculiar genius, habits, and advantages; but when the policy was established by the votes of Southern men, these Northern people had the sagacity to say, "Very well, since it must be so, and has begun to take root, let it not be disturbed, but let us see how we can make the most of it." Even the Agricultural Society of the old Bay-State remonstrated against a tariff for encouragement of American manufactures; but, said she, when the measure was carried against her, "*any system is better than eternal fluctuation*."

Labour delights and is happy in the *certainty* of its returns, however moderate; and capital, when it perceives the ground to shake under it, and

the times to be portentous of change, turns its back and flies away, as the cautious skater when he feels the ice begin to bend under his weight. Let us have but a fixed policy of "encouragement and protection," and specific duties, and we shall find condensation of population, and combination of forces of all sorts, physical and intellectual. The loom and the anvil will gather near about the plough and the harrow. Improvement will precede expansion of population, of which it will be the only legitimate parent, and the great result will be improved education, the maintenance of peace, and the steady growth of public and private virtue, and all the arts and blessings of the highest civilization.

Every county in Maryland and Virginia should have a bank—a small one—in proportion to its inhabitants—divided into small shares, and among all the people. Let him who cannot take \$100, take \$50, or \$25. Not to be loaned to nabobs, or to furnish big salaries to its officers, but for the accommodation of small, industrious men—to hire labour, and to buy lime and other manures—to build good stables and out-houses, and small factories, to use up the wool and the hides, and the tan-bark, and a thousand things that are wasted.

There are more than 100 banks in Massachusetts, and their notes *everywhere at par*—"as good as gold." Thus it is that no element or source of productive industry—neither genius, industry, or materials—lie idle for want of means to put them in active operation. But you do not hear them eternally crying out "free trade—free trade!"

Let us buy where we can buy cheapest—sell where we can get most—for well they know, that, in the long run, that may often be bad economy. Well they know that a man had better deal with one who will pay him 60 cents a bushel for his corn, one year with another, than to get \$1.00 this year, and 40 cents for ten years to come.

THE CHESAPEAKE AND OHIO CANAL.

HOW CONNECTED WITH THE AGRICULTURE OF VIRGINIA.

A CORRESPONDENT of the *Alexandria Gazette* says:—

"In a recent calculation, based upon the census of 1840, we find there are seventeen counties to be directly benefited, and likely to furnish supplies to the canal, viz.:—Morgan, Hampshire, Hardy, Warren, Shenandoah, Rockingham, Augusta, and Pendleton, in Virginia—with Alleghany, Washington, Frederick, and Montgomery, in Maryland, producing 14,425,134 bushels of grain—being within a fraction of 92 bushels for each inhabitant, and the 42d part of all the grain raised in the United States, in 1840. These counties are to be directly benefited by the completion of this work, and will send down a large proportion of this produce to the cities of the district, and to Alexandria especially. With facts of such magnitude before us, and the immense coal trade awaiting the completion of this work, who can calculate the reflex influence of our city upon the Treasury of the State, when compared with the small sums drawn to place us in a condition to attract this immense trade?"

Speaking further of the great iron works at Mount Savage, he observes:—

"No proper calculation can be made of the power and capacity of the works at Mount Savage. I have been informed that one and a half millions have been expended from time to time, in their construction; but in consequence of the depressing influence of the late policy of the government in not affording sufficient protection to the iron interest, these works have been compelled to suspend: and recently have passed into other hands, at an immense sacrifice. The present company are waiting, I understand, for some modification of the tariff, by which sufficient protection will be afforded them against the pauper labour of European countries."

Yet there are those who would prefer a tariff under which coal and iron are imported from England, for fear—for fear—of what? Why of violating the principles of "free trade," and the—resolutions of '98!

SOME THOUGHTS ON TRANSPLANTING TREES.

THERE are few operations in American Husbandry, in which so much want of reflection, not to say gross and wilful neglect, is displayed, as in the *transplantation of trees*—whether for fruit or for ornament. It must, however, be admitted, that in this as in all other branches of rural industry, much improvement has taken place within a quarter of a century, since agriculturists commenced to *read* and to *reason* on the *principles* that are involved and brought into action in the practice of every branch of their business, as well as in the business of ship-building, or navigation, or of manufacturing iron or leather. The former practice was (to what a lamentable extent it still continues!) to dig a hole for a young and tender tree, as for a gate-post, just large enough to jam it down, often times doubling up the roots, throw back the dirt to fill up the hole, ramming it with a small rammer, or the handle of the spade, or the eye of a hoe, and there leave this tender creature, without more care or attention, to take care of itself. Let every reader ask himself whether there is much, if any, exaggeration in this statement of the general management of young orchards within his remembrance! Is it any wonder, therefore, that disappointment and mortification should ensue—any wonder that if the tree lives at all, its growth should be stunned, its existence sickly and unfruitful, and its death premature? Why, does any man believe that it ever was intended that such management, if it be not an abuse of terms to call it management, should be crowned with success? We might as well suppose that it was ordained that man should lie on his back and have nothing to do but to open his mouth, and the manna of Heaven which “suits every man’s palate,” would drop into his lazy throat! No, no! man was commanded, not only to replenish the earth, but to “subdue” it.—“In the sweat of thy face shalt thou eat bread,” and for our part we have some difficulty in understanding in what sense the necessity for labor should be deemed a curse. “I have already enjoyed too much; give me something to desire,” said the Prince of Abyssinia, on being asked if he wanted nothing, how he could be unhappy?

In transplanting a tree, instead of restricting our thoughts merely to its present existence and wants, it is proper that we should consider what is necessary to its *growth and prosperity*, and remember, that it will require nursing

and care, such as we would bestow on a young colt—*food* to sustain life and promote growth, and scrubbing and vermifugent medicines to save it from the ravages of parasitic moss, and the internal and external attacks of worms and other insects; and he who is not prepared to provide the food, and to bestow the care here prescribed, to feed and defend it at the root, and to drive off its more open enemies, had better sit down in his sleepy arm-chair, hug indolence to his bosom, and be content to submit to the privations and disgrace that are the just portion of men too ignorant, or too lazy, to perform the duties that belong to their employment and condition in life.

Let him who transplants a tree (and the management of a single one will apply to a whole orchard) ask himself how and where it is to get the elements of its growth? Is it from the air? No! for in that case there would be some chance for its living, when planted in the way we have described; but the support is to come through the roots from the ground. Is it not, then, obvious that we should take care of two things?

1st. That the ground contains the suitable food, and

2d. That it be pulverized and made *easily* accessible to the roots, as far as they would be inclined to go, and that inclination bears a certain proportion to the greatest size that the tree would attain under the most favorable circumstances. Suppose the young tree to be planted, as used to happen, and still does in many cases, in a small hole, in hard, poor land, and then *reverse all these conditions*, as much as possible, and the work will be done in the way that common sense will teach every man it should be done; and that a regard for his own profit and reputation will lead him to do. In other words, let the whole orchard, if it be an orchard, be well manured, then let the *whole field*, not a particular round or square hole just sufficient to admit the roots, but the whole field, be deeply plowed, (if trench-plowed, so much the better,) and well pulverized, and so far, and not short of that, the Farmer will have, *up to that point*, done his duty. If the hole be made much smaller than the space which would be ultimately penetrated by the roots, provided they had their way, in well-manned ground, when the roots have extended to the circumference limits of the hole dug for its reception, *then* will its growth receive a sudden check,

just as would the growth of a fat colt if suddenly put on short allowance, or a calf which had sucked from the whole udder, when restricted to one teat; and the farmer, good, easy man, wonders how his orchard should stop growing! Starvation generates disease, just as vermin are bred in the filth and rags of the lazar. So arborical poverty and sickness will contract moss which at once consumes the substance of the tree, and offers a ready shelter for the thousands of insects on the look-out for exactly such places to deposit their eggs, the young of which, when hatched, again find their natural food in the fruit. A tree, like everything else in nature, when it comes into existence, should be supplied with food and *kept growing*, if you wish it to attain its full natural growth and fruitfulness. The truth of this is illustrated in a thousand ways, for Nature is prodigal in her offers of instruction, if man, whose natural and sluggish tendency is to repose, would only keep his eyes open. What science does she not illustrate? For one instance, suppose a stalk of corn, under favorable circumstances, to reach great size, and to have ears that commence with a large number of rows, promising a prodigious yield; yet if there comes a severe drouth, the ground bakes, the roots are checked, and the air and the earth both become dry, and you will find that the ear of corn which had started with, we will say, 12 rows will contract to ten, and if these distressing circumstances of earth and atmosphere continue, finding that it cannot carry out its second undertaking, it will contract the number of rows again to eight; but, strange to say, it will always preserve an *even number*. All this we remember to have seen exemplified in corn exhibited at Wilmington, Delaware. Some have contended for proof of *intelligence* or volition in the roots of a plant from its selecting food adapted to its growth, and the rejection of that which would be deleterious. This alteration more than once of the design of the corn, to produce a certain number of rows, and its invariable adherence, under all circumstances, to an *even number*, looks yet more like volition or instinct. But let us admire the mysteries that we cannot penetrate and explain. Providence never designed that we should know everything at once, but wisely stimulates inquiry by the lively hope and ambition of new discoveries. In the midst of the deserts of Africa, when on the eve of perishing, the ill-fated MUNGO PARK shook off the despair under which he says he was fast sinking unto death, by seeing in the midst of that desert a delicate spear of moss, at which he said if even that was not beneath the care of Providence, why might he not yet hope to be saved? But to return to our subject. If plants of corn require a certain distance within which to grow, and to have the

intervening space manured and pulverized, why should not *trees* require the same advantages in *proportion* to their size. True, the tree demands not, neither does it get the frequent stirring of the land which is indispensable to corn while growing, because its roots are stronger and its natural life is longer; but the tree does require the land to be well manured and well broken, at least when it is planted; and it is only when the planter is prepared to offer it that indispensable guarantee of life, growth, and fruitfulness, that he ought to take its life and managery into his keeping. If he cannot thus care for 100, let him plant 50, and if not 50, let him plant 10. Let him, in a word, in this case and all others, embark in nothing which he does not *mean to do well*, and, thank God and the progress of light and knowledge, the time is coming when the ignorant and slovenly farmer will lose caste and character as surely and as much as the pettifogger is contemned at the bar, among learned counselors, and the demagogue despised in executive offices and the halls of legislation, by true patriots and statesmen.

All this have we written without intending to do more than barely say a word in recommendation and support of the following essay, which we find in the September number of the English Farmers' Magazine. The reader will think that the comment has anticipated, without so well expressing the meaning of the text. Better than either, however, will he find the extract from Mr. DOWNING's valuable book on 'The Fruit and Fruit Trees of America,' to which it did not occur to us to revert, until we had written to the end of the preceding paragraph. We hope he will excuse us for offering to the reader a draft, which, large as it is, will only stimulate his thirst for more, and prompt him to take, at the original fountain, the book itself, from which we have drawn the chapters which follow the English Essay, for his instruction.

PREPARATIONS FOR PLANTING.

As the season approaches when trees of all kinds may be planted with every prospect of success, under circumstances most favorable to their success, it has been judged fitting to make some allusion to the preparation of land in general, referring to a future opportunity any notice of the soil peculiarly suitable to each.

Trees, agriculturally considered, are great enemies to the crops of the farm; and, as such, many writers of the day have successfully labored to show that, however ornamental they may be in themselves, and to the landscape of the country, their existence, in hedge-rows above all, is an evil, unless it be in exposed situations, where they may act as screens of defence against the violence of prevailing winds.

There are two or three writers of recent date whose works will be referred to, and recommended as guides to readers interested in the culture of ornamental and timber trees. These writers are Mr. Withers, of Holt, Norfolk, who

has written *con amore* upon this, his favorite topic; and Mr. Stephens, of Edinburgh, author of "*The Book of the Farm*," a work which ought to be in the hands of every agriculturist of the new school who is emulous to meet the emergency of the times by the relinquishment of ancient prejudices, and the adoption of new and improved modes of culture.

They who have candidly perused "*The Woodlands*" of the late William Cobbett, must acknowledge that his directions, whether in all cases correct or not, are precise, and intelligible to all. Its style is clear, its rules simple and perspicuous; and, as the author really begins at the beginning, any one who is desirous to do the work of planting effectually, may confide at least in the rules which are there laid down for the preparation of the land, because there is no mystification in them.

It is certain that the beauty of English scenery is mainly dependent upon the multitude of its hedges and hedge-row trees; but, as was proved by a late writer on the Agriculture of Devonshire, the country suffers severely by these ornaments; utility and productiveness are thus sacrificed; and, therefore, as we would have things put in their right places, we at once urge the abandonment of all those harbors of vermin, which cause the waste and deterioration of agricultural grain crops, in more ways than one, without any redeeming qualification, inasmuch as the timber and underwood about a farm are, in themselves, of no remunerative value whatever.

But timber is a source of wealth: trees are glorious objects; and plantations adorn a country: therefore we would place them in appropriate situations, and grow them when there to perfection; but, to do so, the preparation of the land is a consideration of first-rate importance.

Trees ought, in fact, to be grown in woods; also, as screens or belts for protections; and in groups, or positions, where, placed singly, they may constitute a prominent and striking feature of park scenery. The late Rev. William Gilpin, in that interesting book, "*The Forest Scenery*," has afforded many striking examples of the effects of grouping, chiefly with a view to *picturesque beauty*; and we recommend the perusal of it to every one interested in the art of planting, for that express object.

But beauty cannot consist with stunted deformity; therefore we must, in the first place, study the soil and its effectual preparation; and upon these points our best writers are perfectly agreed.

Cobbett insists chiefly upon the thorough trenching of the land to the depth of at least two feet, reversing the surfaces if the soil be good to that extent; but he justly qualifies this position by observing that the soil may be such, in respect to its subsoil, "as to bring to the top something in which hardly anything will ever strike root—as, for instance, clear chalk, or pure sand, or gravel, or clay." When this is the case, the top mould must be kept at top; "but still the *trenching is always to be performed*, for the ground must be moved and turned to the depth of two feet." Mr. Withers is not content with trenching or deep plowing; he adds manure to the amount of twenty loads per acre, and says that, "when *you manure*, you never want to fill up, for all the trees are sure to take, and instead of filling up, you may, after the third year, take out and transplant at least a tenth part of them." (Memoirs, 1827.)

Mr. Withers's "Letter to Sir Henry Stuart, Bart., on the Improvement in the Quality of Timber"—1829—is a very valuable treatise, and worthy of being better known.

It is, perhaps, needless to revive the subject of a controversy which once was carried on most strenuously between the advocates of effectual preparation of land by deep trenching, and others who were content to open holes in the ground for each individual tree. "The cheap, hole-digging, short-sighted Scotch system," as it was called some twenty years ago, was "calculated to bring upon those who adopted it only loss and disappointment," that in this day of philosophical inquiry and chemical research, we have little cause to make farther allusion to that which experience must have disqualified. But it cannot be wrong or invidious to inquire into the causes by which deep comminution of soil will contribute to the permanent advantage of every species of vegetation.

Without farther entering into the mechanical processes of trenching, already described in the first part of the articles upon "*Orchards*," it will be relevant to insist upon the agency of those chemical constituents of soil—loams especially—which never entered into the calculation of the earlier writers. Our forefathers knew nothing of analysis; they had no idea of the existence of the phosphates, silicates, and alkalies, which modern Chemistry has brought to light. But now we know, and the knowledge is widely diffused—thanks to the enlightened German chemist, Liebig!—that, by the breaking up and the pulverization of earths, a volume of salts—usually termed the *inorganic* constituents of land—is distributed through the staple earth, and afford to timber those salts, the presence of which was deemed inexplicable.

Thus the thousands of tons of pearl and potashes, that have been articles of commerce to an extent almost unlimited, are now understood to be derived from the soil, and distributed only through (not formed or created *in*) appropriate vessels of the vegetable tissue. The laboration of the ground, therefore, is now proved, beyond question or doubt, to be indispensable, not only, as was supposed, to the first advances of young trees, but to their future progress towards perfection.

Trenching is, in no case, labor lost; and even where a single tree only is to be planted, to produce a particular effect, the hole to receive it ought to be prepared upon the principles of trenching—that is, by opening and comminuting the earth to a very considerable extent and depth, so as to insure good drainage, and the free tracings and extension of the roots, laterally, through a number of feet around the bole of the tree.

They who have traveled extensively, and witnessed the wretched progress of young trees that have been planted in holes so small as to require their roots to be, as it were, screwed into the ground, will want no other monitor to impress the great, undeniable truth, that early and effectual preparation is the only guarantee of success. Let any one try the experiment upon a couple of gooseberry bushes, by planting one in a narrow hole, and the other by expanding its roots in a soil worked and made permeable to the extent of a square yard, and the difference of the results will be sufficiently established before the lapse of two entire seasons. The soil shall be the same—a free unctuous loam—and the sites contiguous; yet one tree will be stunt-

ed, while the other shall produce luxuriant and healthful young wood; one will bear early a few starved berries—the other, though not so soon in maturity, will maintain a high state of fertility for, perhaps, fourteen years.

J. TOWERS.

TRANSPLANTING.

As nearly all fruit trees are raised first in nurseries, and then removed to their final position in the orchard or fruit garden; as upon the manner of this removal depends not only their slow or rapid growth, their feebleness or vigor afterwards, and in many cases even their life, it is evident that it is in the highest degree important to understand and practice well this *transplanting*.

The season best adapted for transplanting fruit trees is a matter open to much difference of opinion among horticulturists; a difference founded mainly on experience, but without taking into account variation of climate and soils, two very important circumstances in all operations of this kind.

All physiologists, however agree that the best season for transplanting deciduous trees is in autumn directly after the fall of the leaf. The tree is then in a completely dormant state. Transplanted at this early season, whatever wounds may have been made in the roots commence healing at once, as a deposit directly takes place of granular matter from the wound, and when the spring arrives the tree is already somewhat established, and ready to commence its growth. Autumn planting is for this reason greatly to be preferred in all mild climates, and dry soils; and even for very hardy trees, as the apple, in colder latitudes; as the fixed position in the ground, which trees planted then get by the autumnal and early spring rains, gives them an advantage, at the next season of growth, over newly moved trees.

On the other hand, in northern portions of the Union, where the winters commence early, and are severe, spring planting is greatly preferred. There, autumn and winter are not mild enough to allow this gradual process of healing and establishing the roots to go on; for when the ground is frozen to the depth of the roots of a tree, all that slow growth and collection of nutriment by the roots is necessarily at an end. And the more tender sorts of fruit trees, the Peach and Apricot, which are less hardy when newly planted than when their roots are entire, and well fixed in the soil, are liable to injury in their branches by the cold. The proper time, in such a climate, is as early as the ground is in a fit condition in the spring.

Early in autumn, and in spring before the buds expand, may as a general rule be considered the best seasons for transplanting. It is true that there are instances of excellent success in planting at all seasons, except midsummer; and there are many who, from having been once or twice successful in transplanting when trees were nearly in leaf, avow that to be the best season; not taking into account, that their success was probably entirely owing to a fortunately damp state of the atmosphere at the time, and abundant rains after the experiment was performed. In the middle States, we are frequently liable to a dry period in early summer, directly following the season of removal, and if transplanting is deferred to a late period in spring, many of the trees will perish from drouth, before their roots become established in

the soil. Spring planting should, therefore, always be performed as soon as possible, that the roots may have the great benefit of the early and abundant rains of that season, and get well started before the heat of summer commences. For the neighborhood of New-York, therefore, the best periods are, from the fall of the leaf, to the middle of November, in autumn; and, from the close of winter, to the middle of April, in the spring; though commonly, the seasons of removal are frequently extended a month beyond these limits.

Taking up the Trees is an important part of the operation. A planter should never forget that it is by the delicate and tender points or extremities of the root that trees take up their food; and that the chance of complete success is lessened, by every one of these points that is bruised or destroyed. If we could remove trees with every fibre entire, as we do a plant in a pot, they would scarcely show any sign of their change of position. In most cases, especially in that of trees taken from nurseries, this is, by the operation of removal, nearly impossible. But although we may not hope to get every root entire, we may, with proper care, preserve by far the larger portion of them, and more particularly the small and delicate fibres. After being taken up, they should be planted directly; or, if this cannot be done, they should be kept from drying by a covering of mats, and when sent to a distance by being packed in damp moss.*

Preparing the places. Here is the fatal stumbling-block of all novices and ignorant persons in transplanting. An English gardener, when he is about to plant fruit trees, talks about *preparing his borders*; an American says he will *dig his holes*; and we cannot give a more forcible illustration of the ideas of two persons as the wants of a fruit tree, or a better notion of the comparative provision made to supply these wants, than by contrasting the two phrases themselves. The one looks upon a tree as a living being, whose life is to be rendered long, vigorous, and fruitful by a good supply of food, and a soil mellow and easily penetrated by the smallest fibre; the other considers it very much in the light of a truncheon or a post, which he thrusts into the smallest possible hole, and supplies with the least portion of manure, trusting to what he seems to believe the inextinguishable powers of Nature to make roots and branches under any circumstances. It is true that the terms differ somewhat from the nature of the culture and the greater preparation necessary in planting fruit trees in England, but this is not by any means sufficient to justify the different modes of performing the same operation there and here.

In truth, in this country, where the sun and climate are so favorable, where pruning and training are comparatively so little necessary, the great requisite to success in the ordinary culture of fruit trees is the *proper preparation of the soil* before a tree is planted. Whether a transplanted tree shall struggle several years to recover, or grow moderately after a short time, or at once start into a very luxuriant and vigor-

* We should notice an important exception to this in the case of trees packed for shipping across the Atlantic. In this case they should be packed only in *dry* moss; the moisture of the sea air being sufficient to keep the roots in good condition, while if packed in damp moss they will be injured by rotting or excessive growth.

ous growth, depends entirely upon the amount of care and labor the planter is willing to bestow on the soil for his trees. We have seen several instances where, side by side, one man planted his trees in large spaces of deeply moved and rich soil, and another in small holes in the common mode, which uniformly showed the trees of the first, larger after five years, than those of the last, after twelve.

No fruit tree should be planted in a hole of less size than three feet square, and eighteen inches to two feet deep. To this size and depth the soil should be removed and well pulverized, and it should if necessary be properly enriched by the application of manure, which must be thoroughly mixed with the whole mass of prepared soil by repeated turnings with the spade. This preparation will answer, but the most skillful cultivators among us make their spaces four or five feet in diameter, or three times the size of the roots, and it is incredible how much the luxuriance and vigor of growth, even in a poor soil, is promoted by this. No after mending of the soil, or top dressings applied to the surface, can, in a climate of dry summers like ours, equal the effects of this early and deep loosening and enriching the soil. Its effects on the growth and health of the tree are permanent, and the little expense and care necessary in this preparation is a source of early and constant pleasure to the planter. This preparation may be made just before the tree is planted, but, in heavy soils, it is much better to do it several months previously; and no shallow plowing of the soil can obviate the necessity and advantages of the practice, where healthy, vigorous orchards or fruit gardens are desired.

The whole art of transplanting, after this, consists in placing the roots as they were before, or in the most favorable position for growth. Begin by filling the hole with the prepared soil, within as many inches of the top as will allow the tree to stand exactly as deep as it previously stood. With the spade, shape this soil for the roots in the form of a little hillock on which to place the roots—and not, as is commonly done, in the form of a hollow; the roots will then extend in their natural position, not being forced to turn up at the ends. Next examine the roots, and cut off all wounded parts, paring the wound smooth. Hold the tree upright on its little mound in the hole of prepared soil; extend the roots and cover them carefully with the remaining pulverized soil. As much of the success of transplanting depends on bringing the soil in contact with every fibre, so as to leave no hollows to cause the decay of the roots, not only must this be secured by patiently filling-in all cavities among the roots, but when the trees are not quite small, it is customary to pour in a pail of water when the roots are nearly all covered with soil. This carries the liquid mould to every hidden part. After the water has settled away, fill up the hole, pressing the earth gently about the tree with the foot, but avoiding the common practice of shaking it up and down by the stem. In windy situations it will be necessary to place a stake by the side of each tree to hold it upright, until it shall have taken firm root in the soil, but it is not needful in ordinary cases.

Avoid deep planting. More than half the losses in orchard planting in America arises from this cause, and the equally common one of crowding the earth too tightly about the roots. No tree should be planted deeper than it formerly grew, as its roots are stifled from the

want of air, or starved by the poverty of the soil at the depth where they are placed. It is much the better and more natural process in fact to plant the tree so that it shall, when the whole is complete, appear just as deep as before, but standing on a little mound two or three inches higher than the level of the ground about. This, when the mound settles, will leave it nearly on the level with the previous surface.

Mulching is an excellent practice with transplanted trees, and more especially for those which are removed late in the spring. Mulching is nothing more than covering the ground about the stems with coarse straw, or litter from the barn-yard, which by preventing the evaporation keeps the soil from becoming dry, and maintains it in that moist and equable condition of temperature most favorable to the growth of young roots. Very many trees, in a dry season, fail at midsummer, after having made a fine start, from a parched and variable condition of the earth about the roots. Watering, frequently fails to save such trees, but mulching when they are planted will entirely obviate the necessity of watering in dry seasons, and promote growth under any circumstances. Indeed, watering upon the surface, as commonly performed, is a most injurious practice, as the roots stimulated at one period of the day by water, are only rendered more susceptible to the action of the hot sun at another, and the surface of the ground becomes so hard, by repeated watering, that the beneficial access of the air is almost cut off. If trees are well watered in the holes, while transplanting is going on, they will rarely need it again, and we may say *never*, if they are well mulched directly after planting.

The best manure to be used in preparing the soil for transplanting trees is a compost formed of two-thirds muck or black peat earth, reduced by fermenting it several months in a heap with one third fresh barn-yard manure. Almost every farm will supply this, and it is more permanent in its effects, and less drying in its nature, than the common manure of the stable. An admirable manure, recently applied with great success, is charcoal—the small broken bits and refuse of the charcoal pits—mixed intimately with the soil. Air-slaked lime is an excellent manure for fruit trees in soils that are not naturally calcareous. Two or three handfuls may be mixed with the soil when preparing each space for planting, and a top dressing may be applied with advantage occasionally afterwards, to increase their productiveness. But, wherever large orchards or fruit gardens are to be planted, the muck compost heap should be made ready beforehand, as it is the cheapest, most valuable, and durable of all manures for fruit trees.

Pruning the heads of transplanted trees, at the season of removal, we think generally an injurious practice. It is certainly needless and hurtful in the case of small trees, or those of such a size as will allow the roots to be taken up nearly entire; for, as the action of the branches and the roots is precisely reciprocal, and as new roots are rapidly formed just in proportion to the healthy action of the leaves, it follows that by needlessly cutting off branches we lessen the vital action of the whole tree. At the same time, where trees are transplanted of so large a size that some of the roots are lost in removing them, it is necessary to cut back or shorten a few of the branches—as many as will restore the balance of the system—otherwise the

perspiration of the leaves may be so great, as to exhaust the supply of sap faster than the roots can collect it. A little judgment only is necessary, to see at a glance, how much of the top must be pruned away before planting the tree, to equalize the loss between the branches and the roots.

When it is necessary to transplant fruit trees of large size, the best practice is to prepare them previously by digging a trench round the whole mass of roots, undermining them, and cutting off all roots projecting beyond this line. The trench should be dug at such a distance from the tree as will include all the large and sufficient ball of roots, and it should be done in the spring, or before midsummer, when it is desirable to remove the tree the next year. After all the roots that extend to this circular trench are cut off, the earth is replaced, and by the season following an abundance of small fibres is sent out by the amputated roots, which, when the whole is now removed, will insure the success and speedy growth of the tree. This is more completely the case when the tree is prepared two years before transplanting. A variation of this mode, which has been found quite as successful and less laborious, consists in leaving the trench open, and covering it with boards only, or boards with a top layer of turf. The tree then is somewhat checked in its growth, it throws out an abundance of small fibres into the ball of earth containing the roots, and is the next season transplanted with great ease and safety.

The proper size for transplanting varies somewhat with the sort of tree, and the kind of culture intended. It is, however, a maxim equally well settled, both among theorists and the best practical men, that health, immediate vigor, and duration, are all greatly promoted by transplanting fruit trees of small size—from three to six or seven feet. We are fully aware with what impatience the beginner, or a person who knows little of the culture of trees, looks upon trees of this size—one who is eager to plant an orchard, and stock a garden with large trees, thinking to *gather a crop next year*. The latter may indeed be done, but the transplanting so affects the tree, that its first scanty crop is followed by a long season of rest, and feeble growth, while the plantation of young trees is making wood rapidly, and soon comes into a healthy and long-continued state of productiveness—often long, indeed, before the large trees have fairly arrived at that condition. The small tree, transplanted with its system of roots and branches entire, suffers little or no check; the older and larger tree, losing part of its roots, requires several years to resume its former vigor. The constitution of the small tree is healthy and unimpaired; that of the large is frequently much enfeebled. A stout and vigorous habit—what the nurserymen call a *good stocky plant*—is the true criterion of merit in selecting fruit trees for transplanting.

Trees intended for orchards, being often more exposed than those in gardens, should be somewhat larger—not less than six, or more than eight feet is the best size. For gardens, all experienced cultivators agree that a smaller size is preferable; we prefer plants two years old from the graft. Most gardeners abroad, when they select trees with more than usual care, take what are called maiden plants—those one year old from the graft, and there can be no doubt that, taking into account health, duration, and the ease with which such a tree can be made to

grow into any form, this is truly the preferable size for removal into a fruit garden. But we are an impatient people, and it is not till another after century of trial and experience in the culture of fruit trees, that cultivators generally in this country will become aware of the truth of this fact.

The facility with which the different fruit trees may be transplanted differs considerably. Plums are generally removed with most success and after them nearly in the order as follows:—Quinces, Apples, Pears, Peaches, Nectarines, Apricots, and Cherries; the latter succeeding with some difficulty when of large size.

Laying-in by the heels is a practice adopted as a temporary kind of planting, when a larger quantity of trees is at hand than can be set out immediately. A trench is opened, and the roots are laid in and covered with soil, the tops being previously placed in a sloping position, inclining to within a few feet of the surface. In this way they are kept fresh and in good order, until it is convenient to plant them finally. In northern districts, where the autumn is often too severe for planting, and the spring is frequently too late to receive trees in time from nurseries farther south, it is a common and successful mode to procure trees in autumn and lay them in by the heels until spring, covering over the tops of the more tender sorts if necessary with coarse litter.

In planting an orchard, always avoid placing the trees in the same spot or near where an old tree stood before. Experience has taught us that the growth of a young tree, in such a position, is weak and feeble; the nourishment suitable to that kind of tree having already been exhausted by a previous growth, and the soil being half filled with old and decayed roots which are detrimental to the health of the young tree.

THE POSITION OF FRUIT TREES. SOIL AND ASPECT.

In our favorable climate many fruit trees will thrive and produce some fruit in almost any soil, except dry sand, or wet swamps. But there is much to be gained in all climates by a judicious selection of soil, when this is in our power, or by that improvement which may generally be effected in inferior soils where we are necessarily limited to such. As we shall, in treating the culture of each genus of fruit, state more in detail the soils especially adapted to its growth, our remarks here will be confined to the subject of soils generally, for the orchard and fruit garden. The soils usually selected for making plantations of fruit trees may be divided into light sandy loams, gravelly loams, strong loams, and clayey loams; the first having a large proportion of sand, and the last a large proportion of clay.

The soil most inviting to the eye is a *light sandy loam*, and, as it is also a very common soil, more than half the fruit gardens in the country are composed of this mould. The easy manner in which it is worked, owing to its loose and very friable nature, and the rapidity with which, from its warmth, crops of all kinds come into bearing, cause it to be looked upon with almost universal favor. Notwithstanding this, a pretty careful observation, for several years, has convinced us that a light sandy soil is, on the whole, the worst soil for fruit trees. Under the bright skies of July and August, a fruit tree requires a soil which will retain and afford a mod-

erate and continued supply of moisture, and here the sandy soil fails. In consequence of this the vigor of the tree is checked, and it becomes feeble in its growth, and is comparatively short-lived, or unproductive. As a tree in a feeble state is always most liable to the attacks of insects, those on a sandy soil are the first to fall a prey to numerous maladies.* The open loose texture of a sandy soil, joined to its warmth, affords an easy passage, and an excellent habitation for all insects that pass part of their lives in the ground, preparatory to rising out of it to attack the fruit, foliage, or branches of the tree.

Such are some of the disadvantages of a light sandy soil; and, in thoroughly examining many of the fruit gardens of the middle States the last few seasons, we could not fail to be struck with the fact that in nine cases out of ten, where a variety of fruit was unusually liable to disease, to blight, or to the attacks of certain fruit-destroying insects, as the curculio, the trees themselves were on sandy soils; while on the other hand, and frequently in the same neighborhood, the same sorts were growing luxuriantly and bearing abundant crops, where the soil was a rather strong loam.† For a few years, the growth and productiveness of the trees upon sandy soil, is all that can be desired; but the trees are shorter lived and sooner fall into decay than where the soil is stronger. If there is any exception to this rule, it is only in the case of the Peach, and judging from the superior flavor of this fruit on stronger soils, we are inclined to doubt the value of the exception even here.

Gravelly loams are frequently much better adapted for orchards than sandy, especially where the loam is of a strong quality, and the gravel is not in excess; and the hardier fruits usually do well on this kind of soil.

Strong loams, by which we mean a loam with only just a sufficient portion of sand to make it easily worked, are on the whole by far the best for fruit gardens in this country. A strong loam is usually a deep soil, and affords during the whole heat of summer, a proper supply of moisture and nourishment to the roots of trees. Fruit trees do not come into a bearing state so soon in a strong as in a sandy loam, because the growth of wood is more vigorous, and fruit buds are not so soon formed; but they bear larger crops, are much less liable to many diseases, and their longevity is much greater. The largest and most productive orchards of the Apple and Pear in this country are upon soils of this kind.

Clayey loams are, when well drained, and when the clay is not in excess, good fruit soils; they are usually strong and deep soils though rather heavy and difficult to work. Trees that will flourish on these soils, such as the Apple, Pear, Cherry, Plum, and Apricot, usually are very free from disease, or insects, and bear large

crops. In a moist climate, like that of England, fruit trees on a clayey loam would die of canker, brought on by the excessive quantity of water contained in the soil, but such is not the case under the high and warm temperature of our summers. The finest, largest, and most productive Plums and Pears within our knowledge, grow in sites on the North river, when the soil is a stiff clayey loam, almost approaching a clay. Those fruits that on light sandy soils are almost worthless from their liability to disease, and the attacks of insects, are here surprisingly luxuriant and fruitful.

It is, however, well to remark, that some varieties of fruit, perhaps from the circumstances of their origin, succeed better on sandy soils than any other; thus the Newtown pippin will only arrive at perfection in a strong loam, while the yellow bell flower is finer when grown on a sandy soil. But these are exceptions to all rules, and what we have already stated, as to the relative quality of soils, will apply pretty generally to the whole of this country south of the Mohawk river; and it may be added that calcareous soils, of whatever texture, are better than soils of the same quality where no limestone is present.

Trenching is the most complete method of improving a soil too sandy, when the subsoil below is of a loamy or clayey nature. Deep subsoil plowing, by bringing up a sufficient quantity of the stratum below, will answer the same purpose. When the subsoil of a sandy soil is sand or gravel, the surface can only be improved by top-dressings, or the application of manures. Top-dressing with clay is the most simple means of changing the nature of such a soil, and it is surprising how moderate a quantity of clay will give a closer texture to light sandy soils. In manuring such soils, we may greatly improve their nature as well as condition, by using composts of peat or bog-earth, swamp muck, or river mud, instead of common barn-yard or stable manure. The former are not only more permanent and better as manures for fruit trees, but they gradually consolidate and improve the whole texture of the soil.

Indeed, no fruit garden, where the soil is not naturally deep and rich, is in *perfect* condition for planting trees, unless the soil has been well trenched two spades in depth. This creates a matrix for the roots, so deep and permanent that they retain their vigor and luxuriance through the drouths of summer and continue for a long time in a state of health and productiveness.

It is difficult to give any precise rules as to *aspect*. We have seen fine fruit gardens here in all aspects. Perhaps the very best aspect, on the whole is a gentle slope to the southwest, because in such positions the trees, when in blossom, are somewhat protected from the bad effects of a morning sun after spring frosts. But, to remedy that more perfectly, it is sometimes the practice to plant on the north sides of hills, and this is an effectual way where early frosts are fatal, and where the season is long and warm enough to ripen the fruit in any exposure. A due south slope is, south of New-York, frequently found too warm for many fruit trees, in soils that are light and dry.

Deep valleys, with small streams of water, are the worst situations for fruit trees, as the cold air settles down in these valleys in a calm frosty night, and buds and blossoms are very frequently destroyed. We know a rich and fertile valley

* This remark applies to the middle and southern portions of this country. North of the 43d degree, a light sandy soil is perhaps preferable as warmer and earlier.

† As an instance in point, the owner of one of the most highly cultivated gardens in the vicinity of Boston was showing us, in despair, some trees of the Seckel pear upon which he could no longer get good crops, or fair fruit, and lamenting the *degeneracy* of the sort. The next day we saw in a neighboring garden beautiful crops of this pear growing with the least possible care. The garden in the first case was a sandy loam; in the second, a strong loam.

of this kind in Connecticut where the Cherry will scarcely grow, and a crop of the Apple or the Pear is not obtained once in ten years; while the adjacent hill-tops and high country, a couple or three miles distant, yield abundant crops annually. On the other hand, the borders of large rivers, as the Hudson, or of some of our large inland lakes, are the most favorable situations for fruit trees, as the climate is rendered milder by large bodies of water. In the garden where we write, a fourth of a mile from the Hudson, we have frequently seen ice formed during the night, of the thickness of a dollar, when the blossoms of the Apricot were fully expanded, without doing the least harm to that

tender fruit. This is owing to the slight fog rising from the river in the morning, which, softening the rays of the sun, and dissolving gradually the frost, prevents the injurious effects of sudden thawing. At the same time, a couple of miles from the shores, this fruit will often be quite destroyed. In short, the season on the lower half of the Hudson, may, from the ameliorating influence of the river, be said to be a month longer—a fortnight earlier in spring, and later in autumn, than in the same latitude a few miles distant; and crops of the more tender fruits are, therefore, much more certain on the banks of large rivers or lakes, than in inland districts of the same climate.

WOOL-GROWING AND SHEEP HUSBANDRY IN MISSISSIPPI.

ADAPTATION TO, AND RESOURCES FOR—THE BERMUDA GRASS.

[Extract to the Editor of "The Plough, the Loom, and the Anvil."]

"I wish you could impress upon our planters the immense advantage which would accrue to them from *sheep raising*. I have never seen a country better adapted to, or which could be more profitably used for that purpose, than the worn-out hill lands of Adams, Jefferson, and Claiborne counties. These lands are no longer of much value for raising cotton, or indeed crops of any kind which require ploughing, but if thrown out of cultivation for a few years, their barren mounds and unsightly gullies become covered with a spontaneous growth of *Bermuda grass*, which soon hides their deformities with a mantle of rich green. Though the Bermuda is much contemned in *Georgia*, it is *here* highly prized, as forming our most valuable pastures: indeed it supplies the place of *clover*, which you are aware does not thrive here. I have never eaten finer mutton than that raised here, upon Bermuda pastures, without any care or attention whatever. It is one of our earliest spring grasses; drought affects it but slightly, and if kept cropped close, no better sheep pasture can in my opinion be found.

"Among other virtues of the Bermuda, it cleans the ground *thoroughly*; weeds, burs, and briars, are entirely eradicated by it—another reason why it should be prized for sheep pasture.

"The old hills of which I speak, and with which I know you are familiar, if turned into pasture farms would also prove exceedingly valuable for the purpose of raising stock for the New Orleans market. New Orleans is now supplied with beeves from the western portion of Louisiana, and from Ohio, Indiana, Missouri, and other Western States. Those driven from West Louisiana, after a journey of several hundred miles, arrive in such poor condition at their place of destination, that they must be re-fattened ere they are fit for market. Those from the Western States are in a still worse condition; for besides loss of flesh, their confinement for so long a time in boats, without exercise, renders them feverish and often diseased. The Mississippi hill planter, on the contrary, *with properly prepared pastures*, can fatten his beeves at comparatively trifling expense, and placing them on one of our river packets, land them in New Orleans in thirty-six hours!

"In view of these facts, therefore, I have become convinced that did the owners of these lands understand their *true* interests, they would find it far better to invest their surplus capital in the preparation of grazing farms, than in Louisiana swamp lands, and *more* negroes, to swell the aggregate of a cotton crop already too large. There is much to be done ere the agricultural resources of the South are properly developed, and that proper division of labour, &c., established, without which her prosperity cannot be perpetuated; and should these crude views meet with your approbation, you can do much toward effecting the change, through the columns of your influential journal. Pardon the freedom with which I write; but the fact that my first information upon agricultural subjects was derived from a perusal of the files of "The American Farmer," to which my father was a subscriber from its commencement to the period of his death, twenty-five years ago, in Queen Anne county, Md., I feel as though I was addressing an old friend.

"With earnest wishes for your continued health and prosperity,

"Yours,

WM. H. JACOBS."

We should be at a loss what to say, if we had room to add any thing, to Mr. Jacobs's interesting letter. The first thing that occurs is, to reiterate our exhortation to farmers, to *think*, to *inquire*, and decide with manful independence of judgment, whether they may not, now and then, deviate from the course of their forefathers! The whole world besides is in a state of transition and progress. Steam alone would and has revolutionized the relations, pursuits, and business of men; and, though not practically applied to the extent that it might and ought to be, to the practical operations of cultivation and husbandry, yet indirectly it affects the interests, and ought to work a corresponding change in the business of the farmer and planter. Of this there could be no better illustration than that given by Mr. Jacobs in the above letter. While it might be injudicious and unprofitable, in the Adams county planter, to send a bullock a-foot to New Orleans, it becomes quite another problem, when he can send him there in a steamboat, in the highest condition, in thirty-six hours. Is he, then, to remain stationary and unchangeable in his course, while all the world besides is adapting itself to the changes suggested by this mighty agent, to the purposes of transportation by land and water? Why does not the planter of Calvert and St. Mary's counties, or the farmer of Queen Anne's or Talbot county, Maryland, continue, as formerly, to order himself a new coat and knee-buckles and breeches, and fair-top boots, and fatten up his horse, or go on board of a bay-craft, and sleep in its hold, on bags of wheat, on a three days' journey to Baltimore, as formerly, even within our remembrance? It would be quite as reasonable as not to avail himself of other advantages offered by steamboats and railroads.

As for the *quality* of Mississippi mutton, nothing has been to us more remarkable than its excellence—as we have found it there at public and private tables—and an eminent officer of the army, observant of every thing worthy of observation, Gen. JESSUP, has told us that he has nowhere found it better, if as well flavoured and fine, as that which is pastured in the country back of Baton Rouge.

Now what more could or can we do, to illustrate the advantages of a much more extended attention to, and practice of, "*sheep husbandry in the South*," than to prevail, as we did, with the best qualified gentleman we knew, in the whole circle of our acquaintance, (H. S. RANDALL, Esq., of Cortland village, New York,) to indite a book under that express title? one which leaves nothing unsaid on the subject, that any one need to know, whether it be the practical sheep-breeder, or the mercantile, manufacturing, or politico-economical inquirer into that subject? Yes, such a book, discussing it in all its aspects, and illustrating by portraits and diagrams all that needed to be thus exemplified, is, for not exceeding \$1, at the command of every one who would desire (what every one should wish) to know all about the various breeds of sheep—their anatomy—food—diseases—treatment, and economy of every sort.

We might, and perhaps may, reprint some chapters from this work, designed expressly to explain how far, and to what breeds of sheep the South is adapted, demonstrating the profits that would attend that branch of husbandry, with ample discussion as to pasturage, management, &c. But to this there is the objection that many of our readers already possess the work—that after all much of the book would have to be omitted, and, finally, considering that it is in itself a distinct subject or branch of business, of primary importance where circumstances invite the pursuit of it—and one which no gentleman aspiring to be well-informed in the literature as well as the practice of agriculture ought to deny himself for the pitiful consideration of saving one dollar.

MANUFACTORY OF WOOLLEN CLOTH IN THE U. S.

HISTORICAL.

COULD any one awake, and in his senses, imagine that this manufacture, so essential even to national independence, had been so recently introduced? But is it any worse to send to England for our clothing than to send there *for coal and iron*? We used to send "home," as it was called, for saddles and bridles, and why not do it now? True, we have the hides to make the leather, and the bark to tan the hides, but have we not also the coal cropping out and the iron ore scattered all over the country, and millions of acres of the finest lands and the choicest climate for rearing wool? Why, before the Revolution, it was admitted, in England, that wool was to be had from Georgia, equal to the best Spanish wool, and there are in her mountain regions (the most delightful climate in the world—Italy not excepted) thousands of acres to be had at very low prices, on which European immigrants would find a paradise—the German to rear sheep, and the Dutchman and the Scotchman to make butter and cheese, if we had a tariff to turn our own resources to account! But the farmer and planter are taught that for him there is nothing like "free trade," under which the over-worked, half-starved pauper labour of Europe can undersell the independent, well-fed labourer of the United States, and thus it is that we play into the hands of the lordly manufacturers of Manchester and Leeds, while we force all who come to this country to go to the West and turn *rivals* of the planter and farmer instead of going into manufacturing enterprises, where they would be *customers* of the farmer and planter! And all this is called *common sense*, forsooth. It certainly requires uncommon sense to see the sense of such a policy.

We do not know from what paper the following was cut, but we think it well to preserve it, where it may be found as a matter of history, which time will invest with even more interest than it possesses now:—

PRIORITY IN CLOTH WEAVING.

Some time ago we published a very interesting letter from an old and favourite correspondent in Berkshire County, Mass., claiming for that county the honour of having introduced the broad-loom for making cloth. The claim is disputed, it will be seen, on behalf of Oneida County, in our own State, by a writer whose position qualifies him to speak with knowledge on the subject, and whose communication we subjoin:—

MESSRS. EDITORS:—In a late number of your paper I noticed an interesting letter, written at Pittsfield, Berkshire County, signed N. S. D. and dated March 15. The initials of this letter are my own slightly transposed, and some persons, who know me, in this vicinity, and who also know that I have long been engaged in the manufacture of woollen goods, supposed me to be the author. I am induced, for this and some other reasons, to undertake the correction of some mistakes into which the author has no doubt unintentionally fallen.

N. S. D. speaks of a power-loom having been used in Pittsfield in 1806, or at farthest 1808, by Mr. Scholfield, for the manufacture of broadcloth. The power-loom had not then been invented, even for cotton goods; and it was some years after they had been introduced into cotton-mills, before it was supposed possible to weave broadcloths in a power-loom. Indeed, it is not much over twenty years since the first introduction of the broad power-loom.

If I am not wrong, my old friend Abraham Schenck, now deceased, first made use of the broad power-loom at the Glenham woollen factory, near Fishkill, Dutchess County, now in successful operation under the management of his noble-hearted brother, Peter H. Schenck.

There is something in this letter about a statement made by Samuel Lawrence, in the Merchants' Magazine. I have not seen the statement, but if Mr. Lawrence says that a woollen factory, built in Rhode Island in

1813, was the first woollen-mill built in the United States, he is widely in error.

The Oriskany Manufacturing Company was incorporated February 16, 1811, with a capital of two hundred thousand dollars. The company, in anticipation of an act of incorporation, commenced their present main manufacturing building in the year 1810, on what, at that early day, was considered a very large plan; that is, they erected a capital building of brick and stone, three stories high, besides the basement and attic, and filled it with the best machinery that could be obtained.

This mill was erected upon land which was purchased of the late Col. Gerrett G. Lansing, near the Oriskany Creek, in the town of Whitestown and county of Oneida, during embargo times, and when we were on the eve of a war with Great Britain. Dr. Seth Capron, an officer of our Revolutionary army, formerly of Cumberland, Rhode Island, one of the most enterprising men of that day, two of whose sons are now among the most respectable men and successful manufacturers in this country, first devised the plan of commencing this manufactory, and soon enlisted in the patriotic enterprise a great many of the leading men of the State, of both the great political parties of that day. Among the first subscribers to its stock are found the names of Jonas Platt, Thomas R. Gold, Nathan Williams, Gerrett G. Lansing, and his brother the chancellor, De Witt Clinton, Ambrose Spencer, William G. Tracy, Newton Mann, Smith Thompson, Theodore Sill, John Taylor, Francis Bloodgood, Stephen Van Rensselaer, Morris S. Miller, Arthur Breese, Solomon Wolcott, Elisha Jenkins, &c., thus lending their names to what was then deemed a great and patriotic enterprise—not in the expectation of enriching themselves, but in the hope that their example might induce others to embark in like enterprises; thereby rendering our country measurably independent of Great Britain, at least for the clothing with which we were covered.

The company commenced the business of manufacturing woollen goods immediately, and have been steadily moving on from that day to this in the production of woollen fabrics—said, by many, to be inferior to none manufactured in this country.

It is within my recollection that the satinets made by this company have been sold at \$3.50 per yard by the case, and retailed at the stores in Utica and Whitesborough at \$5 per yard, while their broadcloths sold at retail at from \$12 to \$15 per yard.

In 1812 this company paid for their wool an average price of 80½ cents per pound, and in 1814 the average price was \$1.15 and \$6.10 per pound.

The spindles first used in the factory were brought from England in 1796, by William Goss, the father of the present superintendent of the mill; and were first used by George Booth, of Dutchess County, who charged 2s. admittance to persons wishing to see them in operation.

The Oriskany Manufacturing Company wove the first woollen yarn ever woven in a power-loom in the United States. This was a narrow loom, for cassimeres, made at the Oneida factory, in 1818, and started by William Graham, an accomplished weaver and excellent man, who, I believe, is yet living in the northern part of this county. Mr. James Goss, the present superintendent, performed the first work that was ever done by machinery in this mill. He was then a boy, and worked upon a machine called a billy, which is used for slubbing wool. We paid at that day fifty dollars a month for good slubbers; as they were called. We do not now slub the wool at all, but spin direct from the carding machines. We then paid 1s. 6d. per pound for spinning the yarn, after it had been slubbed, which was quite an expensive operation. We now pay about 1½ cents per lb. for

spinning, and dispense with the slubbing altogether. We then paid from 50 to 56 cents a yard for weaving broadcloths; we now pay from 3 to 5 cents per yard for weaving on the power-loom. We then raised the nap by hand; and it would take the labour of forty men to do what is now done upon one gig with two boys. We then sheared with large hand-shears, and paid experienced shearers \$50 per month; it would take more than one hundred men to shear the cloths that are now sheared in this mill, with the aid of machinery, by four girls.

The first agent of the mill, upon the ground, was Colonel Garret G. Lansing, a continental officer, whose memory will always be green in the recollection of those who had the happiness to call him friend. The second was Dr. Seth Capron, whose memory is also embalmed in the recollection of all who knew him. Horace Hunt was agent for a short time, and is, I believe, still living. George Hutton, a practical manufacturer, was the next agent. He was subsequently invited to Waterloo, to start a very extensive woollen mill in that place, in which he was eminently successful. He died quite recently. The present agent, S. Newton Dexter, has managed the affairs of the company for the past twenty years, and the superintendent is James Goss, who has now been practically engaged in the business for thirty-nine years. Our agents in New York are Wolcott and Slade, No. 13 Broad street. S. N. D.

P. S.—I am wrong in supposing that the first broad power-loom was started at Glenham; my friend James Shepherd started the first broad power-loom, as I am credibly informed, at Northampton, Massachusetts.

A FREE TRADE NUT.

MASSACHUSETTS has nearly 800,000 inhabitants; is rich in labour, wealth, and prosperity—her people are all producers and manufacturers. They live in peace and plenty, and command the attention of the people not only of sister States, but of foreign countries also. Of them her people buy the *raw material*, and manufacture all they consume, profit by their own industry, reap the earnings of those who bow to their skill and enterprise, pocket the interest upon all their own and much of their neighbours' capital, draw within her borders the cream of enterprise, talent, and learning, and reward all according to their dues, owing the world around them nothing, and see with a clear and unclouded vision naught but success and prosperity ahead.

Why is this? Thus:—

She pays \$1.25 for a bushel of wheat, and gives in pay 25 yards of brown sheeting at 5 cents per yard. She pays 60 cents for a bushel of corn, and gives in pay 1 yard of super. satinet. She pays \$12.00 for a barrel of beef, and gives in pay 6 yards of super. broadcloth.

Now take a Western State: Illinois, for instance. She is rich in labour, natural soil, and heaven's elements of prosperity. Her people are all producers from the soil, but nothing from manufactures. They live in fear only of crowded corn-markets, and accept of the purchase of her commodity by people from sister States as a boon of gratuity. Of others she buys all her manufactured goods, expends the profits of her own labour in transportation-charges out and in, loses her surplus capital, wastes her enterprise, talent, and learning, owes everybody, rewards none beyond a bare living, and hangs upon the future without any thing but hope.

Why is this? Thus:—

She sells wheat at 60 cents a bushel, and takes pay in 6 yards of sheeting at 10 cents per yard. She sells corn for 20 cents a bushel, and takes her pay in satinet at the rate of \$1.50 per yard. She sells beef for \$4.00 per barrel, and takes her pay in 1 yard of broadcloth.

Well—what now? Simply this: the agriculturist in Massachusetts receives 25 yards of sheeting for a bushel of wheat, while the Illinoian receives but 6; the difference is, say 300 or 400 per cent. The first receives 1 yard of good satinet for a bushel of corn; the latter one-seventh of a yard; or a difference of 600 or 700 per cent. The first receives 6 yards of broadcloth for a barrel of beef, while the latter gets only one yard; or a difference of 600 per cent.

But, says a knowing one, the Massachusetts man cannot raise the bushel of wheat, corn, &c., to buy the 400, 500, or 600 per cent. more in difference! For the sake of argument, grant it, if you please, that he cannot equal you. Yet his own family, his son and daughter, receive more profit for their labour in manufacturing the 25 yards that *bought* one bushel of wheat *from you*, than you did in growing one bushel for the six yards you *receive*, by 200 per cent.; while the difference between the intrinsic worth of the six yards you receive and the 12 yards they paid for the same amount of sustenance in each case, is the real meat of the nut you have or soon must crack; and you will find it in the hands of politicians, speculators, and freight or transit men.

In other words, bring machinery, and customers to tend them, to your own town, manufacture your own goods, and you, too, will receive 25 yards of sheeting for a bushel of wheat; for the wheat will have advanced in price, having plenty of customers near by, while the sheeting, having no freight and speculators' fees to pay, can be sold for five cents.—*N. Y. Merchants' Ledger.*

ARABIAN CATTLE.

LIEUT. LYNCH brought with him, from Syria, a male and female of the beautiful Khaisi breed of cattle, which he presented to the State of Virginia. The legislature of that commonwealth, in turn, presented them to the governor, to dispose of at his discretion, to that farmer within the State whom he should judge as most likely to secure the propagation of the breed. Governor Floyd, accordingly, gave them to Col. James Castleman, of Clarke county. The cattle were lately exhibited at Washington, D. C., and a spectator thus describes them in the *N. Y. Herald*:—

“The khaisis are, respectively, eighteen and sixteen months old, and weigh, the bull 950 pounds, and the heifer 650. The bull is 4 feet 10 inches high, and 10 feet 4 inches in length, from the nose to the end of the tail—the heifer of a proportionate size. They are the most beautiful animals of the cattle kind we have ever seen. Their limbs are as delicate as those of a gazelle, yet strong and well set as those of a race-horse. Their heads have something of the elegance of outline of a deer; their nostrils are as thin and flexible; their feet are broad and flat, yet delicate; their tails, thick and flat at the insertion, taper down to the thinness almost of a whip-lash, ending in a long tuft of silky hair. They are of a deep shining bay colour, and their horns, which are just sprouting, are black as those of a buffalo. When full grown, they are said to stand seven feet high, and the cows are said to yield three half bushels of milk a day.”

The stock of the valley of Virginia, it is believed, will be much improved by the introduction of this new breed. Col. Castleman values the pair at \$10,000.

THE EFFECT OF HAVING THE LOOM AND THE ANVIL
NEAR THE PLOUGH.

HUNDRED OF BASSETLAW—ITS EXTENT AND CAPABILITY.

East Retford, June 29.—This large and influential division of the county of Nottingham (of which the borough of East Retford forms the centre and the capital) contains 197,021 acres of land: of this, 136,969 consist of sand and alluvial soils, and 60,052 acres of clay and loamy soils. Of these 197,021 acres, the following are the purposes to which it is appropriated, viz.: grass, 58,000 acres; grain, 110,000 acres; orchards and gardens, 4360 acres; woods and wastes, 13,358 acres; roads and rivers, 10,863 acres; and hop land, 440 acres. Of the grain land the following are the divisions:—76,000 acres on sandy and alluvial soils, and 34,000 on clay and loamy soils. The portion appropriated to the growth of wheat is on the sand, &c., 19,000; on the clay, &c., 11,300; making a total of 30,300 acres. These, in ordinary years, will produce 131,260 qrs. of wheat, [34 bushels to the acre,] which, after deducting 5500 qrs. for seed, and 26,000 qrs. for home consumption, will leave a surplus of 99,760 qrs. for *exportation to the manufacturing districts*. On the sand lands 19,000 acres are appropriated to the growth of barley, which produce annually 85,500 qrs.; [36 bushels to the acre,] of this the *greater part is used for the purposes of malting*. On the clay soils there are about 5000 acres of barley, which will yield an average of 22,500 qrs. [35 bushels to the acre,] this latter, with some of the former, is principally consumed in the district, in the feeding of cattle, pigs, &c. The remainder of the soil under cultivation is thus appropriated, viz.: in beans and peas, 10,000 acres; in oats and skegs, 17,000 acres; and in tares, &c., 3300 acres. The bean land will give an average yield of 18,750 qrs., of which it is calculated 7500 qrs. are consumed at home, and 11,250 qrs. are sent away. The number of horned cattle fed in the district amounts annually to 13,500; of this, 4750 head are consumed by the inhabitants, and 8750 sent out of the country. The quantity of sheep yearly kept in the district is not less than 197,000, of which 78,800 are store sheep, and 118,200 are fatted into capital mutton. Of these latter the total number consumed at home are about 45,600, leaving 73,600 for the Yorkshire and Lancashire markets. The quantity of wool produced annually amounts to 492 tons, or nearly 40,000 tods. Of cheese is produced 240 tons, (independent of home consumption;) of butter, 380,000 lbs.; of hops, 164 tons; of apples and pears, 1183 tons; of plums, gooseberries, &c. 150 tons; and of potatoes, 16,000 tons: and in the production of all these necessities of life it is calculated that not less than a million of money is annually employed by the proprietors and occupiers of the soil.—*Doncaster Gazette*.

Here we see again the effect of manufacturers close at hand, on whom reliance can be had to consume the wheat at an average of 34 bushels to the acre—a good deal over double the produce of New York—and to whom can be sold the barley at the rate of 36 bushels to the acre. But in England, those who manufacture for the farmer have their looms and their anvils close to the plough, while in America, those who are appointed by State Agricultural Societies to discourse on the politics of agriculture, tell the people of these republican, self-governing United States, they must be prepared to compete against the world in “the great grain markets of the world,”* or take the consequence and live—if it may be called living—in a state of yet greater destitution and degradation, than do

* See Governor Wright’s Address to the New York State Agricultural Society.

those in Europe and Asia, who supply provisions to the British manufacturer to be consumed in the preparation of cloth and iron, and these, thus compounded of the produce of foreign ploughs, to be sent and consumed by the cultivators of the soil in the United States! Assuredly we are a *very wise—a very wonderful people!*

In this very fertile and very productive division of the county of Nottingham, on the other hand, almost every thing is consumed within the county, and the refuse of the land returned to the land. The cattle and sheep that are not consumed on the land are fattened on the land, and thus the elements of the crops are restored to the land that produced them!

DRAINING.—ITS IMPORTANCE OVER-ESTIMATED IN THE UNITED STATES,

IN THE JUDGMENT OF THE PRESIDENT OF THE AMERICAN INSTITUTE.

A FEW pages of the last number of this journal were appropriated to the consideration of the remark by General Tallmadge, as President of the American Institute, in the last of the *six* orations delivered at its Fair of 1848, and all published at the expense of the State of New York, for the benefit (?) of American agriculture—besides the State's annual contribution of \$950 cash, to the same Institute. The remark to which we referred, made in an avowed spirit of deprecation, was this:—"English books on agriculture are our principal sources of instruction!"

We have now only to re-affirm, on reflection, that if the orator had studied to lay down a proposition, the reverse of accuracy in the premises, he could not have hit upon one more happily adapted to his purpose.

With the exception of "THE FARMERS' LIBRARY," in half of which, under our humble supervision, there had then been recently re-published, "VON THAER'S PRINCIPLES OF AGRICULTURE," and "STEPHENS'S BOOK OF THE FARM," (two among the most valuable "books on agriculture" that ever were, or probably ever will be, published in or for any country,)—with that exception, let any man take up any volume of American agricultural annals, and on examination he cannot fail to be impressed with their uniform and nearly exclusive reference to *our own climate, staples, and experience*; almost to the total omission of all foreign matter, rarely even quoting, as they might do, the results of severe scientific investigations by *really* learned men abroad, at least for the establishment of important principles in the art, applicable to all times and all countries. For the truth of this affirmation we confidently appeal to every brother editor of the agricultural press, and to every gentleman conversant with the sources which *have really* constituted our principal dependence for agricultural information.

In the same ponderous book of "*Transactions of the American Institute*," (distended in volume like that "*bladder of imitation-English lard*" for which they gave one of their very *rare* and very *costly* "Dips:" as a premium!)—and made up of contents selected by—who knows?—in that ponderous tome, of more than 800 pages, the learned Secretary read a "translation *made by him*," from the Portuguese, because, as he avers with equal elegance and truth, "we find in it a strong and original sense for which we often look in vain across the Atlantic ocean." Thus there is no violence in the presumption, that both the President and Secretary of that illustrious Institute had in view the transatlantic volumes above referred to. Be that as it may, the Lord deliver the agricultural public, say we, from judgments such as this pronounced by "Judge Meigs."

On the whole, in respect of both these anathemas pronounced by the

President and the Secretary of the American Institute, against "books" coming "from across the Atlantic ocean," may it not be asserted, without fear of contradiction, as a "fixed fact," that such declarations belong to the category of Mr. Jefferson's "false facts?"

And now let us proceed to the President's declaration, as to the importance of "draining" in the United States—to wit: "Our climate," says he, "is arid, and our soil is dry loam and sand. A place suited to draining is the exception and not the rule, in this country. During our summer drought, the fountains are dried up, and vegetation burned. It is hard consolation at such a crisis, when his *flocks are lowing* for drink, to ask the husbandman to read a book on 'draining,' and directing the use of lime and guano, (good in their place,) which experiment has shown to be destructive of all vegetation on this dry soil."

Now, so far from draining being rarely necessary in New York, because it lies south of England, or for any other reason, the observing farmer travelling south of New York, through New Jersey to Philadelphia, scarcely ever loses sight, through the whole route, of land that would not be essentially meliorated and fertilized by better surface-draining, and a large portion of it by thorough under-draining; however expensive, if the owner had the means to accomplish it, as we doubt not many of them have. There are, it is but too true, *dilletante* farmers, looking superficially at the subject, who imagine that ditching and draining are only needed in low bottom lands, to relieve them quickly of the contents of great August thunder-gust freshets, and of the visible oozings of springs and stagnant pools upon the surface. By such farmers, among whom we presume not however to include the venerable President of the "AMERICAN INSTITUTE," nothing is easier than to fulminate their dogmas against the importance of draining in the United States; proving thereby, not that the land does not need to be drained of its superfluous moisture, but that their own brains require to be drained of superficial, to be superseded by more practical knowledge of agriculture. Here we might quote the man who, in England, has most elaborately and philosophically treated all the means of agricultural improvement, and who says expressly: "It has been forced upon me, by long and extensive observation of the state of the soil over the greater portion of the kingdom, that the neglect of draining is the cause of most of the bad farming to be seen, and that not a *single farm* exists, not already thoroughly drained, which would not be much the better for draining." But, well aware how easy it is for every one, however small may be the measure of his practical experience or observation, to answer all arguments drawn from English books, even when resting on immutable principles of universal application, with the stale suggestion, old even to mustiness, of "difference of climate;" and duly impressed, too, with the *weight* of the opinion expressed by the learned Secretary and translator for the American Institute, that for any thing containing "a strong and original sense we often look in vain across the Atlantic ocean;"* we shall discard all testimony derived from "English books," and turn exclusively to *American authorities* for proof, not only of the value of "draining," but of its *general applicability, and particularly in the State of New York!* True, what we shall quote may not be the opinions of men speaking "under the auspices of the American Institute," but is it entitled

* What a blunder must not the New York State Agricultural Society have committed in the judgment of the President and learned Secretary of the American Institute, when it invited Mr. Johnson to come over from England to deliver its annual oration at the next State Fair—a man known to us through English books, some of the best of which are his own, for his great scientific attainments.

to the less respect for coming, as the proof does on which we shall rely, from plain men of much personal experience, who speak "*of that which they do know?*" Going back, then, only twenty-nine years ago, to the second volume of "*The American Farmer*," (the first not being at hand,) and, omitting all our own exhortations from that day to this, to the farmers of the Union, to see that their lands are thoroughly drained of superfluous moisture as the *first and most indispensable step* in any course of improvement; and omitting also all illustrations drawn from "*English books*," for the reason that they are under the ban of the "*American Institute*," let us go at once far south, to a climate and soil more arid and dry even than that of New York, and we find in an able address by Dr. T. S. BELINGER, before the Farmers' Society of Barnwell District, South Carolina, the following:— "Indeed," says the doctor, "the injurious effects of too much moisture even upon lands that *apparently do not require draining*, is so manifest, that were it the custom of farmers to devote a much greater period of every spring to the cleansing out of old drains, *and forming more new ones*, than is generally done, *each crop would fully reward them* for this extra work." Now this opinion of an enlightened planter is founded, the reader will observe, not only on experience in our climate, where (according to what is published by the State of New York) the need for draining "is the exception, not the rule;" but in South Carolina, in latitude 32°, being 9° south of New York, according to the President of the American Institute.

We will now come along northwardly, stopping, however, in the Old Dominion, where the climate is as "arid" at least as in New York, and we find in the second volume of "*The American Farmer*," (1820) (which work might, we apprehend, well take the place of the many trashy novels,* and matter equally out of place in the library of an "*American Institute*.) the following opinion by an enlightened Virginia farmer:—"Land of every description should be cultivated full eight inches deep, and be well mixed. It is then capable of the greatest production, *provided* (at all times) that care has been taken to dispose *of all superabundant moisture*. This, sir, is the indispensable of farming productively." And yet, in a latitude far north of that, the doctrine is gravely promulgated by the State of New York, to be scattered like oak leaves among farmers as premiums for excellence in agriculture, that "draining," recommended in "*English books*," is not worthy of being dwelt upon, as material in our country, and especially in New York!

This "draining," mind you, reader, was pronounced, twenty-eight years ago, and that in Virginia, to be "*the indispensable in farming productively*," and from that day to this, we have never seen it questioned, until now, and that by the head of the "*American Institute*," and the discovery published and circulated in its name, by the legislature of New York! But for these opinions being thus promulgated by such weighty authority, we should not have deemed it, as we have done, under the circumstances, a matter of *duty* to contest them.

Coming down, next, to the present time, the Hon. WILLOUGHBY NEWTON, also of Virginia, who has no superior and few equals as a practical farmer anywhere, in a capital essay on the subject of draining, (for essays on which it seems the Maryland as well as the New York State Agricultural Society in time past, had so little discernment as to offer premiums,) sets out by declaring, in his excellent dissertation:—"There is *no improvement* in agriculture which seems to have been *so much neglected*, and the *profits* of which are so little understood."

* Will some one enlighten the public with a list of them?

We would commit ourselves to publish (as we may yet do) the whole of this admirable essay, notwithstanding the fiat of the President of the American Institute; were it not that we are much pressed for space, and that the plan of this journal requires us to illustrate improvements rather by an explanation of the principles involved in them, than by a statement of details of results, however clear and conclusive, as this is from one of the crack farmers of the Old Dominion. For ourselves, until we met with this denial of the importance of draining, and its very wide applicability to lands in the *United States*, we had considered these points as for ever settled, and only wanted to find, in some form not yet familiar to the American public, some more brief and perspicuous illustration of the *philosophy of the operation*—such as “he who runs may read;” and such an one the reader will find in this number of “The Plough, the Loom, and the Anvil,”—being an “Essay on the preparation of the soil for seed,” which incidentally exemplifies the importance of draining, and from the value of which nothing can detract, unless it be the objection in vogue at the “American Institute!” that it comes from across the Atlantic ocean, and is to be found in an “English,” or rather a Scotch “book!” But why multiply proofs in support of the importance of understanding and applying the principles of draining, notwithstanding the great discovery that America is not England, and even though our climate is arid and our land is “dry loam and sand?” Let any one turn to the index of any one of the agricultural journals of the United States, from 1819 to 1849, and see if he does not find the great importance and value of “draining” and of “lime” most prominently urged, from South Carolina to New Hampshire, and the neglect of them condemned and rebuked by men whose public spirit and practical knowledge entitle them to rank even with the high officers of the American Institute, unless it be, perhaps, with the learned Secretary and author of innumerable translations “*made by him*,” (not by anybody else, mind ye, reader, but as in every instance you are reminded, “*made by him!*”) from the Dutch, the French, the Latin, the Spanish, and the Portuguese—among others, “*O-Aux-i-li-a-dor-da-Indus-tri-a-Na-ci-o-nal*.”

“Mr. MEIGS read the following translation, *made by him*, from the Portuguese, viz. :—

‘*O Auxiliador da Industria Nacional.*

‘June, 1846, Rio de Janeiro, Brazil.’

‘*Vires industria firmat.*—VIRGIL.’

“We translate the following from this volume with great pleasure, not because *it is American*, but that we find in it a strong and original sense for which we often look in vain across the Atlantic ocean.

“The continents of North and South America have a great part to play in the history of the earth. Stretching from *ice to ice*—almost from the arctic to the antarctic circles, they contain all climates, all forms and qualities of earth, and are destined to be the theatres of grand events.” P-r-o-d-i-g-i-o-u-s!

[See “Transactions of the American Institute, 1847,” page 730—being part of the proceedings of the New York Farmers’ Club, published, not by the Institute, but by the State, to be distributed in the *name* of the Institute as premiums to promote agricultural improvement.]

Thus it would appear that the President of the Institute, and the Secretary thereof, (appearing as such—always as such—at the head, and again at the tail, of the proceedings of the “Farmers’ Club of New York,” as published by authority, in that in all else really valuable periodical, “THE FARMER AND GARDENER,”) vie with each other in their low estimate of books coming from “across the Atlantic ocean.” The only curious puzzle in the case is, that

the proceedings of the New York Farmers' Club, published by the State of New York, "at some considerable expense," should be so stuffed to redundancy with "translations *made by him*," from all sorts of languages on so many subjects, not, as all will admit who can take the time to read them, always of *practical* importance to the real hard-fisted, clear-headed farmers of New York, or of any other State; for it is to be observed that at these meetings of what are called "*farmers*," be the subject appointed for discussion what it may, the session usually opens with:

"Mr. Meigs read the following translation, *made by him*!" Thus at the next meeting, again, (page 736,) the regular question being, "Whether manure ascends or descends," the first thing we find is—

"Mr. Meigs read the following translation, *made by him*, (as though that, if a matter of the least importance, might not be *inferred*,) from the '*O Auxiliador da Industria Nacional*,' again, of Rio de Janeiro, June, 1846—beginning with this profound discovery for the farmers of New York, to wit: '*The Roman legislators knew that trees were of high importance*!'"

Following this "translation, *made by him*," come remarks from Dr. UNDERHILL, that are worth reading. Indeed, the observations of the doctor, and of Professor MAPES, and C. H. HALL, and COL. CLARK, and MR. WILLIAMSON, and some few others, when we meet them in the mass of verbiage with which they are too much buried up in these proceedings, remind us of Dr. Johnson's commentary on the work of a certain author: "The good things in it are like bits of *gold packed in wool*; but the wool takes up so much more room than the gold, that it is not easy to pick it out."

To return to our subject, and coming next on from the Old Dominion, still nearer to New York, it is seen that Edward Stabler, somewhat known to fame, it must be admitted, as a practical cultivator and writer, says expressly, that he "has not known a case where this operation has been performed with ordinary skill and judgment, that did not fully repay the expense, and in some cases the product was increased from five to ten-fold;" and the beauty of it is that he found it the means of obtaining the soft "consolation" for his "lowing flocks" and his bleating herds.

Col. Capron, too, in a production remarkable for its cogency and clearness—a man whose bold, rapid, and successful measures for the resuscitation of "worn-out lands," are the admiration of every passer-by, in a region far south of New York, says: "The *first application of capital or labour*, after your lands are well enclosed, is to *rid the soil of all superfluous moisture*." And Mr. Wilkinson, the President of the *Mount Airy Institute*, whose practical knowledge he says expressly was all acquired in the "arid" climate and "dry soil" of New York, maintains, in an essay on draining, which we commend to the particular notice of the officers of the American Institute: "There is no branch of more *general or universal interest*, nor any that seems so infinite in its immediate adaptation to the wants of the producer. Its value is *not confined to any locality*, or its benefits peculiarly adapted to the necessities of any particular set of culturists, but it is of *equal interest to the tiller, in the frigid, temperate, or torrid clime*. In this country, *no state, no county, no town, plantation, or farm, can be said to be beyond the reach of its universal adaptation*."

Having thus brought two line-of-battle ships into immediate conflict, the President of the American and the President of the Mount Airy Institute, perhaps prudence would admonish us to haul off our frail bark, and endeavour to escape in the smoke, but, as New York is more particularly the battle-ground, (though what we say will not be sanctioned and published by authority of an Empire State,) we yet feel it to be an editorial obligation

upon us to bring into the line of action three more combatants from the same State, whose metal, it will be allowed, is of no mean calibre.

The first is no other than Judge Buel, whose authority "is some," in a controversy of this sort. In the Lancaster School-house, at Albany, where the crowd was so great, that, we are told, the officers of the society could with difficulty get access, he stated in a public address, (we refer again to the *American Farmer*, we believe not to be found among the many novels of the American Institute):—

"Another point of *primary* importance in good farming, but in which our country is defective, is the *draining of wet and marshy ground*. *Much of our best lands* is not only rendered useless by this neglect, but it often becomes the local cause of sickness and death."

Then again, Mr. Pell, of Pelham, one of the chief pillars of the Institute, who executed seven and a half miles of underdraining on so small a space, with such wonderful results, and whose authority will never be questioned at the Institute, he says of draining: "*It must take precedence over all other improvements*, and be considered indispensable to fertility. There is *scarcely a farm in the State of New York*, which may not be improved by drains."

Yet another and the last authority we shall adduce, (promising the reader not to trouble him soon again on the subject of "draining,") is the following letter from Mr. Delavan, whose charming residence is near Ballston Springs, *in the State of New York*, a gentleman highly respected for his personal character and general intelligence, as well as the force of his influence and example in the cause of temperance, having led Father Mathew himself in that benevolent and noble enterprise. It will be seen that he too obtained, by draining, the "consolation" of running streams of water for his "flocks lowing for drink," in time of drought.

Ballston, Dec. 3d, 1833.

To Jesse Buel, Esq., President of the New York State Agricultural Society:

SIR:—In reply to your letter of the 27th ultimo, in which you ask me to state to you the result of my experience of the utility and expense of under-draining farm lands. I have to observe, that it is a subject to which I have devoted some attention for the few years during which I have had an interest in agricultural pursuits, and my opinion of its great utility is confirmed by every successive day's observation.

I have applied under-draining to twenty different fields, to the extent of more than two thousand rods, and compute the average cost at half a dollar per rod. The expense, however, is determined by the proximity of materials, and the economy with which the work is performed.

I am convinced the operative farmer, who performs his own labour, can effect similar improvements considerably less than I have stated.

In some instances, the state of my lands required an expenditure of at least \$20 per acre in draining. In such cases the production was coarse, unwholesome grasses, of little value, and tillage was quite out of the question. Twenty dollars per acre was the extent of the value of the land; whereas, after being effectually drained and cultivated, these lands have produced Indian corn, oats, wheat, and clover in great luxuriance, paying an income on one hundred dollars the acre.

Every practical farmer is aware of the inconvenience and disadvantage attending the cultivation of fields, the different parts of which are so various as to preclude a uniform crop and uniformity of cultivation. Draining is the remedy for this.

As the improvement here treated of is of the most enduring nature, it would be unfair to charge the expense attending it upon the product of a single year. My belief is, that I have been fully remunerated by the increased products of three years in all cases; and further, in nearly every field I have, at the termination of the stone drains, durable supplies of water for animals, which, in my estimation, fully compensate the whole expense incurred.

Upon the whole, I know of no subject, connected with agricultural improvements, of more importance than draining; and if these facts I have detailed at your request, should lead a single individual to experiment on this subject, I shall deem the hour occupied in the detail, fully compensated.

I am, sir, very respectfully, your ob't servant,

HENRY W. DELAVAN.

Now do not all these circumstances illustrate the necessity, when gentlemen undertake to speak, *ex cathedra*, on great questions in practical agriculture, that they should be prepared by some study and experience, with a knowledge of the subject? The opinions of these high officers of the Institute become the more important, and the obligations of agricultural editors to examine them is the more imperative, as we respectfully think, when it is considered that it is under their "auspices" not only that the State now prints and circulates whatever they choose to compile of the "TRANSACTIONS OF THE AMERICAN INSTITUTE," to be disseminated over the whole country, as the quintessence—the very *quinine* of agricultural knowledge; but furthermore, that when the State shall have endowed a grand Agricultural College, it, too, is "to be placed under *their* auspices!"

It is related somewhere by Sterne, that he was once called on by his parishioners in time of great mortality among the cattle, to compose a propitiatory hymn, entreating Providence to stay the ravages of the pestilence. When the day arrived for it to be sung in the church, he told his congregation from the pulpit, that he had no genius for poetry, but that the clerk of his parish had, of which they might judge for themselves by a single stanza, which he read as follows:

"There's Johnny Howe
Has lost a cow,
And so has Billy Bland,
Therefore we'll put our trust in God, and
Not in any other man."

Now, since we are advised by two gentlemen, who in their knowledge of agriculture differ from each other only as "one star differeth from another star in glory," that draining is of comparatively little importance, and that "lime and guano *destroy all vegetation*, and moreover, that for any thing of "a strong original sense, we often look in vain across the Atlantic ocean," we begin to conclude, that our thirty years of agricultural inquiry and observation have been all thrown away—that all that we have read and written, and caused to be read and written, about "draining," would be but a "hard consolation" to the farmer, when his "flocks are lowing for drink"—that the thousands of pages we have given on the *use of "lime,"* were altogether inapplicable, and that our publication of the analysis of "*guano*," by French chemists, "across the Atlantic ocean," and the distribution of two barrels of the substance itself, twenty-five years ago in Maryland, was only teaching the farmers how, and giving them the means of "destroying all vegetation," and therefore, instead of following our own judgment, we will hereafter enlighten our readers, as Sterne did, by the lucubrations of the clerk of the parish, or secretary of the American Institute, and author of translations "translated by him," and published by the Empire State of New York, as an illustration, *by State authority, of American proficiency and progress in the science and practice of agriculture*—the "nurse and mother," as Gibbon says, "of all the arts;" that is, we engage to do so when—we have *nothing else to do—and space to throw away.*

P. S. We have somewhere read that the celebrated Moliere became so captivated with a countryman of his who was a great voluptuary and mimic, and lively narrator of comical stories, that he was always seeking his company, and would often call upon him to raise a laugh among his companions—*fais nous rire*—he would say to him, "Make us laugh." Now, as we hope to get next week among our old *friends* in Montgomery county, one of whom, Quaker though he be, and a septuagenarian at that, yet enjoys a good laugh—should they say to us "*fais nous rire*," little as we are given to comedy, we should not despair of making them laugh, should

we read these anathemas pronounced *ex cathedra* from the rostrum of the American Institute, and published by authority of the Empire State, against "*draining*," and the use of "*lime and guano*!" and yet more, should we add to them the dictum of the Secretary of the Institute, whose great learning is not disputed, and who in the fulness thereof finds in "*O Auxiliador da Industria Nacional*" of Brazil, "*a strong and original sense for which we often look in vain across the Atlantic*," as relates to agricultural matters!!

The reader who may think we have given too much space to the consideration of an undisguisedly contemptuous denial of the applicability and importance of "*draining*," as a means of practical improvement, applicable to the United States generally, and especially to the State of New York, ought to bear in mind that this denial was proclaimed by the head of a great "Institute," put forth by the means, and so far sanctioned by the authority of the "Empire State," and that in a volume which they—the Institute—give us to understand is "intended to be indexed for *ready* reference, excluding *uncertain* hypotheses, and including *only* knowledge deduced from *experience* and *accurate* observation, and from sources that *cannot be questioned*, never leading into *mistakes* and *sacrifices*,"—one which is worthy to be "hailed by every sensible farmer in the nation," and to "do more to *promote* and *dignify* agricultural study, than loads of publications, not, to be sure, *altogether* destitute of useful matter, but interspersed with *false theories*, *fanciful* speculations, and accounts of marvellous productions, extracted, if not *fabricated* on the spot, by the publisher, to *excite wonder*, and to make his work sell."

We have only to add in conclusion, that, if the opinion we have been combating had not come from such authority, we should have deemed it *almost* sufficient to meet it by the following extract from the report of a committee, published by the Agricultural Society of New York, in the last volume of their "Transactions," and the chairman of which—J. Delaplane—is, judging from all we have seen from his pen, undoubtedly one of the ablest investigators of agricultural questions of whom we know any thing.

"There is not," say the committee, "one farm out of every seventy-five in this State, but *needs draining*—yes, much draining, to bring them into high cultivation: nay, we may venture to say, that every wheat-field would produce a larger and finer crop, if properly drained."

Was it, then, on our part, the propagation of a "false theory" or "fanciful speculation" to express the opinion that as much land needed draining in the State of New York as would cover half of Rhode Island—say?

ON THE STATE THE SOIL SHOULD BE IN WHEN THE SEED IS DEPOSITED IN IT,*

AND ON THE BEST METHOD OF DEPOSITING THE SEED.

BY HENRY R. MADDEN, M. D., PENICUICK.

IT may, we think, be left to every intelligent reader of the following Essay, to say whether it would not be an improvement on our old systems of education, were such papers to be substituted in all our country schools, for such as we usually find in the "Readers" in common use, such as, "Gods! can a Roman senate long debate which of the two to choose;"—"My name is Norval," &c.?

Why not employ, in the act of teaching "*the art of reading*," such books as will at the same time convey *useful instruction*, in matters which are to constitute the business and pursuit of the boy's life, and by which he is to gain (if he gain at all) his subsistence and an honourable independence? The fact is, that our systems of education were formed and fashioned at a time when the circumstances of our country were entirely different from what they are now. There are now but few large estates to be transmitted from sire to son. Few can afford to have their sons educated and brought up as fine gentlemen, with little or nothing to do but go to the dancing-school, and ride and frolic about the country. The condition of society, and, fortunately, the genius of our people and government, demand that every mother's son of us should *hoe his own row*! The few who have inherited ample fortunes, sufficient to enable them to play the gentleman, and live without work, even they can find so few boon companions in like circumstances, that after lounging a few years about town, in bar-rooms and billiard-rooms, and standing at the corners of streets, until they have become objects of standing pity or contempt among

* Read to a Meeting in the Society's Museum, on the occasion of the Society's Great Annual Show in Edinburgh, in August, 1842.

all intellectual and industrious observers—they get into steamboats and packets, and float off to Europe, leaving their country for their country's good, and finding among the dissipated, the idle, and the profligate, in European capitals, relief from that ennui with which every unoccupied man of any mind must be insufferably oppressed.

Hence the necessity, in our country, for systems of education as *practical* as they can be made; systems under which, every moment, and every action of mind and body, should be made as subservient and as accessory as possible, to the great design of qualifying the future man to gain an honest independence by bodily and intellectual industry, vigour, and acquirement. And why should not the planter and the farmer, the mechanic and the manufacturer, force the government to take measures for the establishment of a school in each State, wherein teachers might be graduated, and then discharged to spread themselves over the country, and under whose instruction, in the schools of the country, the sons of the people might be as thoroughly instructed in the principles of mechanics, civil engineering, and all the various arts and pursuits of civil and useful industry, as are the raw recruits of the army and navy, and regiments of volunteers, by officers educated from year to year, at the expense of the planter and farmer, the mechanic and the manufacturer?—and to whom, when thus educated, the government gives not only the sword, but commissions with ample salaries, enduring and increasing for life, in peace and in war, in a state of idleness as well as in a state of activity, and all placed, in respect of tenure, beyond the reach of vicissitude or accident? Of this we are not complaining, but why not also a school in each State for instructing instructors in the more useful arts of agriculture and manufactures? Has this question been put by any one of the “dear people” to the many candidates for public favour of which this autumnal season of the year is usually so fruitful? No! not by one! The all-absorbing, the sole question is—To what faction seeking to monopolize power and the spoils do they belong?

In civil life, by the time the incumbent begins to exhibit the capacity which some degree of experience can alone impart, he must be turned adrift to “root, hog, or die!” For a Comptroller or Auditor to revise and detect errors of calculation, or acts of speculation, whether large or small, in their accounts for the millions placed in the hands of *military* disbursers, practical familiarity is deemed superfluous. Any measure of knowledge, or virtue, or experience, may do for those in the vulgar line of *civil* service, on whose word millions may be saved or lost; while nothing is more sacred than the life-commission even of a military non-combatant! And even civil trusts, when created and connected with any branch of military administration, have been deemed too good for men accustomed only to the dull pursuits of civil drudgery. As for calling on the government of the people (as ours is called) to make the least provision for education in the *great conservative arts of productive industry*!—such a thing would be deemed in the highest degree chimerical and absurd, if not a treasonable oppugnation to the constitution and the principles of '98! Far more exciting to our republican people than the holiest anthems is the sound of martial music—more sacred than if sprinkled with holy water, is a parchment that in the least savours of blood—the “purple testament of bleeding war!” Take, for example, the following essay on the due preparation of the soil, and its proper and best condition for the reception of the seed of the husbandman; and on the principles involved in the growth and ripening of the plant. We will venture to say, there is not one farmer in a hundred, however practical and experienced, who will not, on a careful perusal of it, perspicuous and demonstrative as it is, understand the whole subject to which it relates better than he did before; and better comprehend how it was that TULL, the great and meritorious pioneer of agricultural reform, managed, by perfect tillage, to get heavy crops of wheat, as it is related, from the same land, twelve years successively, without manure.

Well, is there any reason why the boy who is to till the soil, and make his living “by the sweat of his brow,” should not, on leaving school, carry all such knowledge with him into the field of practice, just as our publicly educated youngest officer carries with him, into the first field of battle, a knowledge of the practical use of gun, howitzer, and mortar;—and even of the preparation of strap, grape, and canister shot, and all else that belongs to gunnery, pyrotechny, &c.;—rather than be left, as farmers' sons now are, to blunder on for years, in ignorance of the very A B C of their profession, and at last having the knowledge of their business beaten into their heads by years of dear-bought observation—or to be picked up by chance and by piecemeal, as even the knowledge which this essay imparts, will be, should this paper happen to be placed in his hands, by a parent more considerate and careful than, as we greatly fear, most parents are? Ah! we are a wise—a glorious people!—never ridden by demagogues—never gulled by humbugs, nor humbug Institutes!!

It is a source of extreme gratification to all who are devoting themselves to agricultural science, that we have no longer to exert all our energies in an endeavour to draw *attention* to this most interesting study ; but that, in dependence upon the favourable excitement produced within the last year or so, we can now proceed with confidence to the illustration of the many varied and interesting phenomena presented to the agricultural chemist, with the assurance that we shall no longer be accused of urging upon your attention subjects with which you have but little to do. No ! I rejoice to say that very many of our most enlightened agriculturists have at length confessed the importance of science to the rightful prosecution of their art, and are now fully prepared to lend a ready ear to the dictates of the chemical philosopher. Still, however, the farmer's mind is more in a state of excitement than of patient and steady inquiry ; and it is with great difficulty that he can be persuaded to wait until the newly applied science has had sufficient time to overtake the long-established practice. The farmer is too anxious that the chemist should at once show him what can be done to *improve the present state* of agriculture, and cannot well understand why chemists are not *at least* as far advanced as he is on the road to improvement.

It is evident that very little reflection is necessary to point out the incorrectness of such a conclusion. It is calculated that two hundred millions of individuals spend their daily toil in the practice of agriculture, and that this state of things has continued for thousands of years ; whereas, as regards the science of agriculture, it has never yet occupied *exclusively* the attention of even twenty individuals in the whole civilized world, and even these during scarcely more than the present century. How, then, is it possible that a science so recent and so sparingly cultivated should be capable at once to keep pace with a practice the most ancient, and the most extensively pursued, of all the varied arts with which man is acquainted ?

Yet, notwithstanding all these disadvantages, there is scarcely, I believe, a single point in the complicated machinery of practical farming, upon which science cannot already throw some degree of light ; and I feel confident that there are very many points, and these among the most important, upon which her knowledge is already so extensive and well-founded, that she is able and willing to proceed hand in hand with the farmer into the wide and enticing field of agricultural improvement.

It is my object in the present lecture to take up but one of the many branches of this complex science, and by it to illustrate two points.

1. I shall endeavour to show the kind of reasoning by which men of science arrive at their conclusions, and by so doing shall endeavour to increase your confidence in our statements ; and, in the second place, I shall point out to you how closely connected these conclusions are with the future prospects of your art, and, as a consequence, how much more certain the progress of improvement must become, when its prosecutors are well-tutored in the principles upon which its success depends.

I have noticed with regret that almost all the popular works hitherto written upon agricultural science have fallen into the one common error of endeavouring to make a chemist of the practical farmer ; the authors all seem to think it necessary that, in order to the improvement of agriculture, every farmer must study chemistry. In this respect, however, I hold a totally different opinion. It appears to me that it would be a precisely analogous case, if writers on climate had said, that, in order to preserve health, it were absolutely necessary that every individual should study medicine. It is not an extended *knowledge* of chemistry that is required—it is only a *confidence* in the results obtained by chemists that is absolutely

necessary. If the farmer becomes acquainted with the facts as they apply to his practice, and if he has such confidence in these facts that he is willing to act in accordance with them, there is not the least necessity that he should occupy his time and burden his mind with all the abstruse processes of reasoning and experimental proof by which the chemist has been enabled to trace out their connection with the complex phenomena which they serve to illustrate.

I admit that it is requisite, in the first instance, to enter just so far into chemical detail as to convince the farmer of its accuracy; but still I believe that this can in general be much better accomplished, by merely pointing out the connection which subsists between various phenomena, and their mutual dependence on one another, without attempting to follow out, step by step, the chemical reasonings which form the groundwork of these opinions.

I purpose at present to give a short narrative of the various conditions of soil, at the time the seed is committed to the ground, and to point out the manner in which these severally affect the prospects of the future crop. And in so doing, I trust I shall be able to satisfy you, that theory and practice are not such extremely different things as many of you appear to think; but that, in fact, the most perfect theory is in all cases the result of comparing carefully with each other the various facts brought to light by *practice*, and that, in fact, the science of all arts is discovered solely by *looking more closely* into the results of *practice*, and comparing them with each other, for the purpose of determining, as far as possible, their connection and mutual dependence. In the following observations, I shall studiously avoid chemical *detail*, and, when referring to any chemical changes which have occurred, I shall simply name *the fact*, trusting to your confidence in the science for its reception.

The first thing which occurs after the sowing of the seed, is, of course, *germination*; and, before we examine how this process may be influenced by the condition of the soil, we must necessarily obtain some correct idea of the process itself. The most careful examination has proved, that the process of germination consists essentially of various chemical changes, which require for their development the presence of air, moisture, and a certain degree of warmth. Now, it is obviously unnecessary for our present purpose, that we should have the least idea of the nature of these processes: all we require to do, is to ascertain the conditions under which they take place; having detected these, we know at once what is required to make a seed grow. These, we have seen, are air, moisture, and a certain degree of warmth; and it consequently results, that whenever a seed is placed in these circumstances, germination will take place. Viewing matters in this light, it appears that soil does not act *chemically* in the process of germination—that its sole action is confined to its being the vehicle by means of which a supply of air, and moisture, and warmth, can be continually kept up. With this simple statement in view, we are quite prepared to consider the various conditions of soil, for the purpose of determining how far these will influence the future prospects of the crop; and we shall, accordingly, at once proceed to examine carefully into the *mechanical relations of soil*. This we propose doing by the aid of figures.

Soil, examined mechanically, is found to consist entirely of particles of all shapes and sizes, from stones and pebbles down to the finest possible powder: and, on account of their extreme irregularity of shape, they cannot lie so close to one another as to prevent there being passages between them, owing to which circumstance, soil in the mass is always more or less *porous*. If however, we proceed to examine one of the smallest particles

of which soil is made up, we shall find that even this is not always solid, but is much more frequently porous, like soil in the mass. A considerable proportion of this finely divided part of soil, *the impalpable matter*, as it is generally called, is found, by the aid of the microscope, to consist of *broken down vegetable tissue*; so that when a small portion of the finest dust from a garden or field is placed under the microscope, we have exhibited to us particles of every variety of shape and structure, of which a certain part is evidently of vegetable origin. In these figures I have given a very rude representation of these particles; and I must beg you particularly to remember that they are not meant to represent, by any means accurately, what the microscope exhibits, but are only designed to serve as a plan by which to illustrate the mechanical properties of the soil. On referring to fig. 1, we perceive that there are two distinct classes of pores; 1st, the large ones, which exist *between* the particles of soil, and, 2d, the very minute ones, which occur in the particles themselves; and you will at the same time notice, that whereas all the larger pores—those between the particles of soil—communicate most freely with each other, so that they form canals; the small pores, however freely they may communicate with one another in the interior of the particle in which they occur, have no direct connection with the pores of the surrounding particles. Let us now, therefore, trace the effect of this arrangement. In fig. 1, we perceive that these canals and pores are all empty, the soil being *perfectly dry*, and the canals communicating freely at the surface with the surrounding atmosphere; the whole will of course be filled with air. If, in this condition, a seed be placed in the soil, as at *a*, you at once perceive that it is freely supplied with air, *but there is no moisture*; therefore, when soil is *perfectly dry*, a seed cannot grow.

Let us turn our attention now to fig. 2. Here we perceive that both the

Fig. 1.

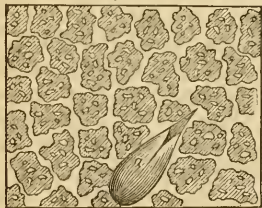


Fig. 2.



pores and canals are no longer represented white, but black, this colour being used to indicate water; in this instance, therefore, water has taken the place of air, or, in other words, the soil is *very wet*. If we observe our seed *a* now, we find it abundantly supplied with water, but *no air*. Here again, therefore, germination cannot take place. It may be well to state here, that this can never occur *exactly* in nature, because water having the power of dissolving air to a certain extent, the seed *a* in fig. 2 is in fact supplied with a *certain* amount of this necessary substance; and, owing to this, germination does take place, although by no means under such advantageous circumstances as it would were the soil in a better condition.

We pass on now to fig. 3. Here we find a different state of matters. The canals are open and freely supplied with air, while the pores are filled with water; and consequently you perceive that, while the seed *a* has quite enough of air from the canals, it can never be without moisture, as every particle of soil which touches it is well supplied with this necessary ingredient. This, then, is the proper condition of soil for germination, and in fact for every period of the plant's development; and this condition occurs

when soil is *moist*, but not *wet*; that is to say, when it has the colour and appearance of being well watered. but when it is still capable of being crumbled to pieces by the hands, without any of its particles adhering together in the familiar form of mud.

Turning our eyes to fig. 4, we observe still another condition of soil; in

Fig. 3.

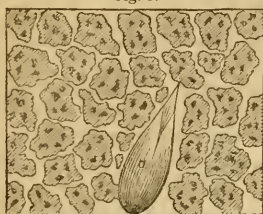
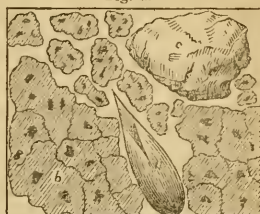


Fig. 4.



this instance, as far as *water* is concerned, the soil is in its healthy condition—it is moist, but not wet—the pores alone being filled with water. But where are the canals? We see them in a few places, but in by far the greater part of the soil none are to be perceived; this is owing to the particles of soil having adhered together, and thus so far obliterated the interstitial canals that they appear only like pores. This is the state of matters in every *clod of earth b*; and you will at once perceive, on comparing it with *c*, which represents a stone, that these two differ only in possessing a few pores; which latter, while they may form a reservoir for moisture, can never act as vehicles for the *food* of plants, as the roots are not capable of extending their fibres into the interior of a clod, but are at all times confined to the interstitial canals.

With these four conditions before us, let us endeavour to apply them *practically*, to ascertain when they occur in our fields, and how those which are injurious may be obviated.

The first of them, we perceive, is a state of too great dryness, a *very rare* condition, in this climate at least; in fact, the only case in which it is likely to occur is in very coarse sands, where the soil, being chiefly made up of pure sand and particles of flinty matter, contains comparatively much fewer pores; and, from the larger size of the individual particles, assisted by their irregularity, the canals are wider, the circulation of air freer, and consequently the whole is much more easily dried. When this state of matters exists, the best treatment is to leave all the stones which occur on the surface of the field, as they act as shades, and thereby prevent or retard the evaporation of the water. We will not, however, make any further observations on this very rare case, but will rather proceed to fig. 2, a much more frequent, and in every respect more important condition of soil; I refer to an *excess of water*.

When water is added to perfectly dry soil, it, of course, in the first instance, fills the interstitial canals, and from these enters the pores of each particle; and, if the supply of water be not too great, the canals speedily become empty, so that the whole of the fluid is taken up by the pores; this, we have already seen, is the *healthy* condition of soil. If, however, the supply of water be too great, as is the case when a spring gains admission into the soil, or when the sinking of the fluid through the canals to a sufficient depth below the surface is prevented; it is clear that these also must get filled with water so soon as the pores have become saturated. This, then, is the condition of *undrained soil*. Not only are the pores filled, but the interstitial canals are likewise full, and the consequence is, that the whole process of the germination and growth of vegetables are materially

interfered with. We shall here, therefore, briefly state the injurious effects of an excess of water, for the purpose of impressing more strongly on your minds the necessity of thorough draining, *as the first and most essential step towards the improvement of your soil.*

The *first* great effect of an excess of water is, that it produces a corresponding diminution of the amount of air beneath the surface, which air is of the greatest possible consequence in the nutrition of plants; in fact, if entirely excluded, germination could not take place, and the seed sown would, of course, either decay or lie dormant.

Secondly, an excess of water is most hurtful by reducing considerably the *temperature* of the soil; this I find by careful experiment to be to the extent of $6\frac{1}{2}^{\circ}$ Fahr. in summer, which amount is equivalent to an elevation above the level of the sea of 1950 feet. So that, supposing two fields lying side by side, the one drained, the other undrained, and supposing them both equally well cultivated, there will be nearly as much difference in the amount and value of their respective crops as if the drained one was situated at the level of the sea, and the other had an elevation as high as the most lofty of the Pentland Hills.* But besides this, and what is nearly equally bad, the temperature is rendered unnaturally high during winter; whereas it has been proved, that one great source of health and vigour in vegetation is the great difference which exists between the temperature of summer and winter; which difference amounts in dry soil to between thirty and forty degrees, while in soil very much injured by an excess of water, the whole range of the thermometer throughout the year will probably not exceed from six to ten degrees.

These are the two chief injuries of an excess of water in soil which affect the soil itself. There are very many others affecting the climate, &c., but these are not so connected with the subject in hand as to call for an explanation here.

Of course all these injurious effects are at once overcome by thorough-draining, the result of which is to establish a direct communication between the interstitial canals and the drains, by which means it follows, that no water can remain any length of time in these canals without, by its gravitation, finding its way into the drains.

The fourth figure indicates badly cultivated soil, or soil in which large unbroken clods exist; which clods, as we have already seen, are very little better than stones, on account of their impermeability to air and the roots of plants. Too much cannot be said in favour of pulverizing the soil; even thorough-draining itself will not supersede the necessity of performing this most necessary operation. The whole valuable effects of ploughing, harrowing, grubbing, &c. may be reduced to this; and almost the whole superiority of *garden* over *field* produce is referable to the greater perfection to which this pulverizing of the soil can be carried.

The immortal Jethro Tull has the honour of having first directed the farmer's attention forcibly to this subject; and so deeply impressed was he with its infinite importance, that he believed the use of manure could be entirely superseded, were this pulverizing carried to a sufficient extent.

The whole success of the drill husbandry is owing, in a great measure, to its enabling you to stir up the soil well during the progress of your crop; which stirring up is of no value beyond its effect in more minutely pulverizing the soil, and increasing, as far as possible, the size and number of the interstitial canals.

* Of course the field of high elevation must be *thoroughly* drained to equal even the *undrained* field at the level of the sea.

Lest any one should suppose that the contents of these interstitial canals must be so minute that their whole amount can be of but little consequence, I may here notice the fact, that in moderately well pulverized soil they amount to no less than *one-fourth of the whole bulk of the soil itself*; for example, 100 cubic inches of *moist* soil (that is, of soil in which the pores are filled with water while the canals are filled with air) contain no less than 25 cubic inches of air. According to this calculation, in a field pulverized to the depth of 8 inches, a depth perfectly attainable on most soils by careful tillage, every imperial acre will retain beneath its surface no less than 12,545,280 cubic inches of air.

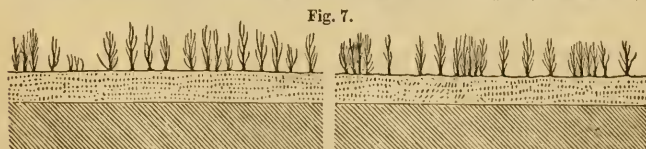
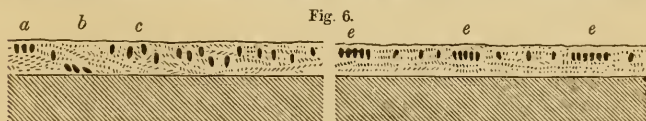
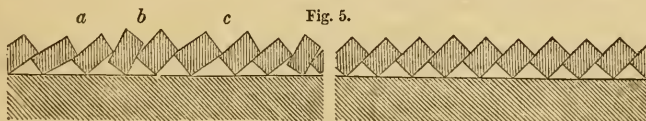
Taking into the calculation the weight of soil, we shall find that, with every additional inch which you reduce to powder, (by ploughing, for example, 9 inches in place of 8,) you call into activity $235\frac{1}{2}$ tons of soil, and render it capable of retaining beneath its surface 1,568,160 additional cubic inches of air. And to take one more element into the calculation, supposing the soil were not properly drained, the sufficient pulverizing of an additional inch in depth would increase the escape of water from the surface by upwards of 100 gallons a day, a quantity which would very soon tell upon the dryness of soil, if there were a continuance of dry weather for several successive days, more especially if this were accompanied by sunshine.

From what I have now stated, I humbly hope that you cannot fail to perceive the close connection which subsists between the mechanical condition of the soil and the result of *germination*; and that you have at the same time felt satisfied of the degree of certainty and point which all the processes of preparing the soil assume, when the principles on which they depend are fully understood and appreciated.

Hitherto we have spoken only of the condition of the *soil* at seed-time; we shall now examine into the various methods in use for sowing the seed, and determine what effect these can have upon the value of the resulting crop.

It is well known to you all that, until lately, the grain crops were almost universally sown broadcast upon the furrow slice, which process has the effect of imitating, to a certain extent, the drill-system. A very few considerations, however, will suffice to point out, that with this system of sowing, your success is so far dependent upon the skill of your workmen, that you may be considered completely at their mercy.

To demonstrate this, let us refer to the figures below, which are designed



to show the effects produced by bad ploughing and bad sowing, as compared with the results obtained by the use of machines.

In fig. 5, you have an example of bad ploughing. You will at once perceive that, in this case, the ploughman has either had a very unsteady pair of horses, or has been but little experienced in his employment.

At *a*, for example, he has given his plough too much land, and has turned over a slice considerably broader than it should be, thus producing, as is shown in fig. 6, a space in which *too much* seed will lodge. At *b* he has laid the slice too upright, thus producing what is technically termed a *proud furrow*, and which in another manner affects the sowing, by allowing the seed to slip down between the two slices, and consequently become buried to far too great a depth below the surface. Again, at *c*, by leaning the plough to the side, he has turned over a slice considerably thicker at the top than the bottom, which, in its turn, will influence the crop by stirring too little soil at certain places, and thus producing an *active* soil of different thicknesses. Besides these, there are various other faults in ploughing which must be familiar to all of you, and which, in the hands of many ploughmen, will be of no rare occurrence; although, as we shall perceive immediately, each one of these errors have a distinct and visible influence on the growing of the crop.

On a field thus carelessly turned over, the sower proceeds to scatter the seed; and here, again, you will at once perceive the effect which the performance of this operation will have on the resulting crop. To the left of fig. 6, I have supposed a good sower to be employed, but still he is labouring under the disadvantage of following a bad ploughman. The figure represents in section the position of the seeds as determined by the condition of the furrow-slice, and you will at once notice several important errors. At *a* there is too much seed, at *b* it is far too deep below the surface, at *c* it is much nearer the surface, and so forth. On the right, again, of fig. 6, I have endeavoured to represent the injury affected by a bad distribution of the seed, even although the ploughing has been performed in the most masterly style, as in the furrow-slices immediately above in fig. 5. In this case at *e* the seed is far too thick, owing to his not having opened his hand soon enough when delivering it out, and on this account the crown of the ridge is much too thinly supplied. This is a very serious, but I fear too common a fault; at least, if we carefully observe the braiding of the fields in spring, there is nothing more common than to see the furrows green, whilst the crowns of the ridges are still nearly bare.

Let us now turn our attention to the results likely to be produced by these various errors. We have already seen that the requisites for germination are air, moisture, and a certain degree of warmth; and I may here observe, that the temperature has a very decided influence upon the time required for germination, and that, within certain limits, the higher the temperature is, the more rapidly does the process go on.

But it must be kept in mind, that soil receives its heat through the medium of the air, and that, consequently, the surface is always more quickly heated than that deeper down; in fact, the heat progresses so slowly from above downwards, that it has been found that at a certain depth beneath the surface, the temperature of summer is not felt until the following winter.

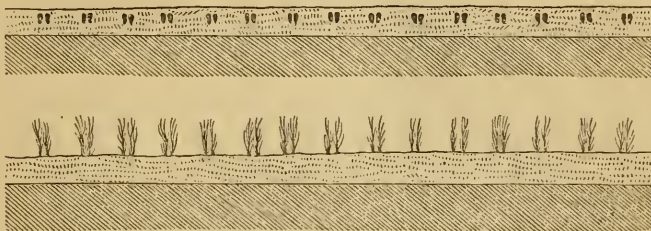
Whenever the air is warmer than the soil, the surface of the soil will be warmer than that below the surface; when, on the other hand, the air is cooler, the surface of the soil will, by contact, cool much more rapidly than that below the surface.

From this state of matters it follows, that the most rapid germination will occur at about an inch or so below the surface, to which depth the heat will soon penetrate, and which, nevertheless, will not be so readily cooled during the night. On this account, the seeds at this level will generally grow most

rapidly, and the germination of others will occupy more and more time, as the distance between them and the surface is increased. It is owing to this fact that seeds too deep sown do not grow at all, the temperature not being sufficiently elevated, and the supply of air too limited to set the chemical processes at work which are essential to germination. In fig. 7, we perceive this result very clearly demonstrated; for, while the plants at one spot, where the seeds were about an inch below the surface, have attained a good size, those which slipped down between the furrow-slices from the bad ploughing, have scarcely yet appeared above ground, as below *a* and *b* of fig. 6.

Turning your attention to fig. 8, you will at once perceive the immense

Fig. 8.



advantage of the machine over the hand-sown crop. In this case, you can work up your land to any degree of fineness you please, by harrowing, grubbing, rolling, &c. You are preserved from every injury arising from a careless distribution of the seed; and even the errors of your ploughmen have not so serious an effect upon the result of the crop. The machine delivers the seed, as in the upper figure, with the greatest exactness, at any depth you please, and the result is, as shown in the lower figure, the greatest equality in the *braird*.

We will now trace, *very shortly*, the progress of our crop towards maturity, and in doing so, we shall perceive that nearly all the ordinary faults in the crop are referable primarily to errors in the cultivation of the soil; errors not so much to be corrected by *science* as by *improved practice*.

The experience of our most enlightened agriculturists have proved satisfactorily, that the ultimate success of every crop depends, in a very great measure, upon the condition of the plants during the *first period of their growth*; that is, from the germination of the seed until the plant has attained some degree of strength, say for the first three or four weeks. If, from any faulty condition of the soil, or the continuance of unfavourable weather, the plants remain in an unsatisfactory sickly condition during this period, they seldom if ever recover their vigour afterwards, and even the most favourable season, during the latter period of their growth, will not compensate for the injury done during the early part of the season. With this fact in view, how careful should the farmer be, that every circumstance as to his soil be so well attended to, that *at least* he should be independent of all defects unconnected with the weather. He should, therefore, by thorough draining, good ploughing, and careful sowing, endeavour to place *every seed sown* under the most favourable circumstances, so that they may all germinate together, and be equally benefited by all the various conditions requisite for the production of a good harvest.

Should these things not be properly attended to, various circumstances may occur that are very injurious to the prospects of the crop, one of the most serious of which is the following:

It should always be borne in mind, that the life of a plant is divided into several distinct stages, each of which has its *defined length*; nay, so fixed are these periods, that it is not difficult to decide the exact number of days required for each in a *healthy plant*; and there can be no doubt, that any circumstance tending to lengthen or diminish any of these periods, has a proportionally injurious effect upon the produce. These periods are four in number, viz., germination, growth, flowering, and the ripening of the seed.

Now, it is well known that if any thing causes the plant to flower *too early*, (thus shortening the period of growth,) the seed never fills so well, neither is the produce by any means so large as when the plant has grown to its proper size before the period of flowering sets in; and, again, it is equally important that the process of ripening *after the seed has filled* should be as rapid as possible. As the period of ripening is upon the whole by far the most important to the farmer, we will in conclusion devote a few words to its consideration.

The ripening of the seed, like all other processes in the vegetable economy, consists entirely of various chemical processes, whose nature I shall not at present attempt to explain, but whose results must be carefully considered in order to arrive at a true conclusion, as to the modifying influence of different modes of culture. When the ear first fills, it appears composed almost entirely of a substance resembling *milk*; in about a fortnight after this, if we again examine the crop, we shall find the seed much more *solid*, the milky juice having hardened and consolidated, and the straw having begun to wither, which it always does from the ground to the ear. At this period, the straw will be yellow for about a foot off the ground,—in another fortnight, the crop will be *perfectly ripe*, that is to say, the straw will be uniformly yellow *up to the ear*, and the chaff will be sufficiently loose to admit of the grain being *rubbed out* by the hands. On examining the ear, the most perceptible difference which has taken place since the last period is, that the skin has become much thicker and harder, while the flour has diminished in quantity. Now, this is the important point, viz., that the last change in the seed is an increase of bran, and a relative diminution of flour, which change increases materially, according to the length of time that elapses between the ripening and the harvesting of the crop.

Bearing this point in view, let us see the effect which bad ploughing will have upon the result at harvest. Those seeds which have been buried too deep will be the last to flower, and consequently the last to ripen; so that if the farmer waits till the *whole* crop appears ready for the sickle, all the early seeds will be *too ripe* by the time that the late ones are sufficiently dry to cut, so that by this error in ploughing, there is a direct loss by the production of less flour from the early seeds, while the farmer is waiting for the late ones to ripen; thus showing that an error committed before seed-time has had its influence during the whole period of the growth of the crop, and has shown itself at last in a considerable loss to the farmer, by his not being able to harvest his grain at the most profitable time.

In the foregoing observations, it has been my constant endeavour to keep out what is merely theoretical, and to dwell more largely upon what has a direct influence on practice, and I have also endeavoured to point out that those who devote themselves to the *true* science of agriculture, by no means confine themselves to chemical detail; but that when they wish really to benefit the farmer, they go out into the fields, watch the performance of every operation, and detect, by personal observation, what is really necessary and what is adventitious; and by so doing, they obtain a fund of knowledge, which, when applied with the aid of the collateral sciences of che-

mistry and vegetable physiology, to the explanation of the phenomena under observation, cannot fail to lead to the most important and *truly practical* conclusions. If a person satisfies himself with *book knowledge* for his practice, and contents himself with sitting in his closet, and drawing up codes of agriculture according to his preconceived opinion of what is right, he will never be capable of rendering any real service to the practical farmer. He may, indeed, by his scientific investigations, throw such light upon some abstruse question as to be of essential service in guiding others who understand both theory and practice into the right path of inquiry; but still I feel confident that the farmer cannot be too cautious in receiving the advice of the *purely scientific*, of those who consider it essential to make *chemists* of every farmer who comes to them for advice; by those he may frequently be misled, but seldom will he be essentially benefited. The man of science who would devote himself to the improvement of agriculture, must himself become acquainted with all the minutæ of practice. He must approach the farmer on his own footing, and converse with him in his own language; and by so doing, we feel satisfied that he will ultimately gain his confidence and support, and will in fact proceed with much more rapid strides in the field of improvement. And we may ask, in conclusion, *what object can be more noble, and what occupation more gratifying, than the constant and unwearied endeavour to improve an art at once the most important and the most extensively cultivated?*

THE MONTGOMERY COUNTY (MD.) FAIR.

AT last we have succeeded in a flying excursion into Montgomery, as far as Rockville, the seat of county government, some fourteen miles from Washington. This Fair we believe was the fourth exhibition of the kind, and, if we could in honesty and fair dealing, we would rejoice to say, that it was a gratifying display of the progressive improvement and high condition of agriculture among a people, if not remarkable, certainly not deficient, either in general intelligence, or in knowledge of what has been done and is doing to push the art of cultivation and husbandry to their highest susceptible amelioration. Whether it was that it has been so long since we had enjoyed the luxury of travelling over an old-fashioned road, at a pace to afford an opportunity of observing the face of the country, and it may be something particularly genial in our *compagnons de voyage*, we know not; but so it is, that to us it had the appearance, both topographically and geologically, of being *naturally* a splendid country. But alas! from the beginning to the end, with rare exceptions, the lavish bounty of nature appeared to have been by man sorely abused and neglected! It needs not an *Esculapius* or a *Galen* to pronounce Montgomery county, so far as we saw of it, the Buenos Ayres of the State—and then how many expanded and beautiful views of the country, as, in returning, you descend from one eminence to the next, until you reach the prominent and commanding “heights of Georgetown!”

The country is undulating and self-drained, and its evident congeniality to the growth of locust and certain other timber would indicate it a fine *farming county*, if the texture and appearance of the soil did not clearly show that it needs nothing to insure recuperation and eminent fertility, but that the loom and the anvil should be in the midst of the ploughs and the harrows: in a word, what it needs is a policy that would tend to the concentration of population and the diversification of employment. Had the action of the government been such, since we achieved our *nominal* independence, as to

bring into full development the water-power, and the coal and the iron, and all the agricultural capabilities of the region drained by the Potomac, Montgomery county would need and might well support 20,000 more able-bodied men in its cultivation and improvement, instead of having her sons driven from her beautiful lands, to rival and undermine in the West the fathers they leave behind them in the East.

Leaving Washington at 2½ p. m., in company with the orator of the day and Mr. George Riggs, we baited, not badly, at Mr. Riggs's beautiful residence, which commands a view of the city of Washington, and the river spreading its augmenting volume as it makes its way past Alexandria, Mount Vernon, and so by the famous "kettle bottoms," to debouche into the broad bosom of the noble Chesapeake, the grandest inland water in the world.

It may be allowable, and cannot be inappropriate to say, that among other choice things at his hospitable board, *peaches*, unequalled by any thing we have ever seen in that way, crowned the dessert—and what perhaps distinguishes Mr. Riggs's gardener in his unfailing management of that delicious fruit, is *repeated and skilful cultivation*, never planting on the ground *crop of any kind*. Proceeding thence, we called, *en route*, at "*Silver Spring*," the farm which Mr. F. P. Blair is known to have selected in an exhausted broom-sedge country, and with no little of skill, and a good deal of something else, has resuscitated as if by the use of Aladdin's lamp. Far from decrying the example of such men, as is often done in a spirit of ignorance and malevolence, the good of society, much more than their own gratification, demands, that they be respected and honoured for exemplifying the good use that may be made of money applied to agriculture, as well as to things less useful and less exemplary. But there was no time to survey and report upon his farm and his management, further than to make a pleasant visit to the spring itself—a cool and copious fountain of living waters, in which, however, there were to be descried several vessels, whose transparency betrayed contents not exactly such as Father Mathew would pronounce to be identical with that which was administered by that beautiful virgin Rebecca, so "fair to look upon," when she so amiably let down her pitcher, to the faithful servant of father Abraham. The plea in this case—how easy to find excuses!—was that something more lively than cold water was needful to ward off the choleraic tendency of the delicious melons which lie there cooling in the same silver fountain.

Now, readers, who of you will deny that these are agreeable incidents on the way to a cattle-show, not to be enjoyed in the act of flying over the face of the country by your modern contrivances?

Well, then, as to the show itself! How easy—how much more agreeable to paint it rose-coloured—to say that the horses were of the finest form and excellence for all work—graceful, tapering necks—head and ears well set on—shoulders coming up sharp, and well laid back—deep-chested, round-barrelled, and ribbed well home—thighs long, and well muscled—large hocks, and short in the canon bone, with clean, flat legs—action smooth and sprightly—and with all spirit and docility happily combined—that the cows showed the good temper and deep milking qualities that mark a good dairy county, such as one might expect so near the Capitol of the Union—that the sheep were numerous and excellent, and adapted some to the comber, some to the butcher—that the tables were filled with fruits fair and of every choice variety, such as every careful man of the least ambition ought to have, who has even fifty acres of land. How much more agreeable to report all these things, or if the reality forbid going into detail, how easy to salve over all deficiencies by a general description, saying, in stereotype phrase, "The whole affair was well conducted, and did great credit to the enterprise,

good taste, neat management, and general zeal of the farmers of Montgomery!" But the *first* question is—would it be true? and if not true, would it be true friendship to the farmers themselves to say so? Says Burns:—

"O wad some power the giftie gie us,
To see oursels as others see us!"

In respect of the domestic animals, which on such occasions too much monopolize attention, except the most noble team of mules, not, probably, "to the manor born," but caught with a silver lasso; the best single exhibition on the ground was a litter of ten pigs, and their dam, property of Dr. Turner Wooten, of that ilk. They were all well shaped, of even growth, and uncommonly large, showing what may be done by high keep and careful attention, as well in Maryland as in New England, where hogs rarely are allowed to live over twelve months—one of these pigs, now six months old, weighed, just before the show, 185 pounds. They seemed to partake deeply of the Berkshire breed. The cross must have been a genial one, looking at the result. The same sow, nearly black herself, had recently ten more, all pure white, by a Chester boar, and we apprehend not so fortunate a cross. From the same adjacent and handsome farm came, as it was rumoured, a basket of magnificent "murphies," labelled "To J. S. SKINNER, from a member of the Montgomery County Agricultural Society."

The next most remarkable feature of the show was a number (much larger in all respects than was to be expected) of oxen well broke, and in size exceeding those generally of Massachusetts, but by no means so compactly and well formed for strength and hardiness. This item of the fair was indeed creditable to the county, evincing a sensibility to the true source of economy in that "arm of the service," with skill to exercise it to the greatest advantage. If they belonged to that immediate neighbourhood, still the wonder might grow, how, to a people so mindful of what is most expedient in a matter so material, should belong a district of country, which, from the road on either hand displays so many briers, bushes, gulleys, and various signs of unthriftiness, deterioration, and—not good management.

There were quite a number of genuine Devons, that exhibited higher blood than keep—for the rest of the stock, with the exception of a very few sheep, there is nothing very emphatic to be said in their praise, and where that is the case, why "the least said is the soonest mended." The ground or grove offered by Mr. Stonestreet, was well fitted for the show, and the collection of farmers, wives, and daughters, was numerous and unsurpassed for appearance, respectability, decorum and politeness on the ground, and hospitality off of it. The fact is, the ladies coming in the force of numbers, of good looks, and in signs of thriftiness, and evident spirit to encourage the best efforts of the harder sex, constituted, as usual, the best part of the exhibition.

Mr. Whittlesey, the well-selected orator of the day, pronounced a very appropriate discourse, full of sound philosophy and sound advice—evincing his well-known good judgment in all things about which he speaks, and, what may not be so well known, great practical familiarity with agricultural details, such as would have justified him in saying as to such as he discussed—*magna pars quorum fui*.

Of the *hams*, we tasted only of that which bore off the first honour to its curer, Mr. Magruder; but if the rest were as good as they looked to be, there is nothing to be seen like them east of the Hudson. Finally, we should say, if a man wants to eat good bacon, and to live to a good old age, among intelligent and good people, far away from the hum of the spindle and the sound of the hammer, and where of course land is cheap and the

people thinly scattered, let him go to the part of old Montgomery which fell under our observation. In the "Sandy Spring" district, which, most reluctantly, we were forced to leave without seeing, it is said they "order things differently."

There every thing is lively and active—the country is improving, comparatively free from debt, from lawyers and from litigation, and when land is to be sold, which is rarely the case, it is quickly bought up at advancing prices. But there the loom and the anvil, the whip-saw and the jack-plane are near to the plough and the harrow.

It would be an improper omission not to say, in this connection, that Mr. ALLEN BOWIE DAVIS seemed to be the mainspring of the meeting, and, as in all cases, and in every thing to which he puts his hand, fulfilled and surpassed the most exacting expectation.

A large party of ladies and gentlemen, in attendance on the exhibition, were hospitably entertained at Mr. STONESTREET's, where cordiality and good cheer well supplied the place of ceremony and extravagance, which are but too apt to unite for mutual display on such occasions.

When we took pen in hand, we did not expect to write more than a dozen lines, nor do we now know, for his "devil" who waits at our elbow, cannot tell us, whether the printer can make room for half we have said—so much the better for the reader and ourselves, if he cannot.

AGRICULTURAL SOCIETIES' CELEBRATIONS.

THE Maryland State Society, of which C. B. Calvert, Esq., is President, is to hold its next fair at Baltimore on the 10th, 11th, and 12th instant. Considering that it depends for its means and success on individual zeal and public spirit, too much could not be said in honour of its President and all his associates. The high position it has at once taken, goes to show again, how much may be expected from a few men of energy, when they represent and are supported by the good-will of an intelligent community. It is expected that the President and heads of departments will so far "venerate the plough" as to attend on the occasion; and, to say nothing of the fine exhibitions of practical agriculture and husbandry that may be expected to illustrate the most important of all the pursuits of industry, the annual address, to be pronounced by Senator Pearce, will of itself doubtless well repay all who may enjoy the enviable pleasure of hearing it!

The Hon. Joseph R. Ingersoll will deliver the discourse to be addressed to the Agricultural Society of Philadelphia, on the 5th instant. It cannot but be ominous of good for agriculture when we thus see men of distinguished talents coming forward to be enrolled on the list of its advocates. But how else could they be more honourably employed?

Mr. Skinner, Editor of "The Plough, the Loom, and the Anvil," has accepted an invitation to deliver the annual address before the Bucks County Agricultural Society, on the 5th instant, and may be expected to explain how it is, in his judgment, that these implements always work together for mutual benefit, and always suffer by wide separation.

SURVEY OF THE LINE OF THE POTOMAC RECOMMENDED.

Baltimore, September, 1849.

J. S. SKINNER:—*Dear Sir*,—I have delayed complying with my promise to furnish you with an essay on the iron trade and its manufacture, on account of the difficulty in procuring statistical and practical details, and have concluded for the present not to attempt an elaborate report, but to send you from time to time short articles on this and kindred subjects appropriate to the time and the occasion.

I commence this important and interesting subject by lamenting, that in Maryland and in Virginia we are without finished geological reports. You are aware that for several years the legislature of Maryland appropriated money for a geological survey, but the explorations scarcely reached beyond the regions of marl when the appropriations ceased. The reports were fruitless and of no avail for iron. In Virginia, the State geologist made considerable progress in his surveys, and his general results were annually reported to the legislature; but here, too, the appropriations were suddenly withheld, and as but few copies of the annual local reports were published, they are now out of print, and for want of a report containing a final summary, much labour and money are lost.

It would be well for you, in your own way, and at the time of the meeting of the respective legislatures, to call the attention of the members to this important matter. Great benefit would result to the public, and science would be promoted by a *final* report from Professor Rogers, of the University of Virginia, compiled from materials already in his hands.

The death of Professor Ducatel precludes the possibility of deriving similar results from his geological surveys in Maryland.

This brings me to a suggestion, to which I ask your personal attention and your personal influence.

The *Valley of the Potomac* presents a most important mineral region; or, rather it presents a cross section of many mineral regions. Commencing at the Chesapeake Bay and ascending the Potomac, we have the alluvial formations and the immense deposits of shell marl and green-sand marl in the diluvial, secondary, and tertiary formations. (Of these, I will speak on a future occasion.) Ascending, we meet the sandstone; then the primitive rocks above Georgetown—gneiss, granite, hornblende; the cellular quartz, containing gold; varieties of limestone, &c.

Approaching the mountains, we strike vast beds of iron-ore, and passing through the mountain ranges iron continues to be developed until we finally reach the great coal fields, which you have lately so appropriately noticed in your letter to Col. Thruston. Now let me remind you, that all this is common to both Maryland and Virginia. Geology pays no respect to geographical lines. The two banks of the Potomac are the same in a geological point of view. The mountains—the mineral strata—are all the same in either State. It is not even broken or interrupted; for the bed of the river is a continuance of the various strata. The Potomac, like many of the rivers of the Atlantic, bisects the mountain ranges at right angles. It is a curious fact. Some attribute it to an immense volcanic rupture by which the earth was opened, giving passage to the waters, but a close examination does not authorize such a magnificent performance. The small section of mountain has departed, but only to a suitable depth, and as the strata run parallel, the opposite faces would correspond and appear to fit without the necessity of parting asunder.

But let me not speculate, but return to the object of the present communication. A geological report of the valley of the Potomac would be of equal value to the two States. The rocks being denuded by nature, and further

exposed by the excavations of the canal and railroad, a perfect geological map could be constructed on the long line from the Chesapeake Bay to the Ohio river, and that map would be a reliable guide for the rock formations for many miles north and south of the line into the respective States. Let the following illustrate my meaning.

Gold is found in Alabama, Georgia, South Carolina, North Carolina, Virginia, and crosses the Potomac in Montgomery county, Maryland, where this precious metal is found as promising as in either of the other States. The cellular quartz which contains the gold, can be traced through this long line, running north-east and south-west in a general direction, parallel with the Atlantic coast and parallel with the mountain ranges, and at right angles to the river.

Now, it is to be presumed, that all the other strata of rocks and minerals follow the same law, and it is the business of geology to ascertain the facts, or report the exceptions, if any there be; and this line of the Potomac and the railroad extension develops the whole.

The same examination and report will make the public acquainted with the order of the strata, as regards the original horizontal arrangement, beginning with the granite and coming up to the coal formations and the sedimentary deposits. But again, I wander from the object of this letter.

The material is already in the hands of Professor Rogers. Once more passing over this line, he would be able to make a most useful and interesting report; and I claim your personal influence and your pen, operating on the legislatures of the two States, to induce them to contract with Professor Rogers for a geological report, extended to the source of the Potomac on the route of the Baltimore and Ohio Railroad, through Western Virginia to the Ohio River.

If your appeal fail, let the Chesapeake and Ohio Canal Company and the Baltimore and Ohio Railroad Company take it up. These corporations are deeply interested in the mineral developments on the right and on the left of these great works. The cost would be trifling; and information resulting from the report, and the enterprise it would inevitably create, would quickly remunerate those companies in the trade it would bring to them.

I have commenced the task you have given me, but let me urge you to the duty of rousing up some interest to procure a geological report of the great line which is soon to connect the Atlantic with the Western waters.

Yours respectfully, E.

NOTE BY THE EDITOR.—Most cheerfully would we use any measure of "personal influence" we might possess for a purpose of such great and obvious utility to the agricultural community; but a people must be educated up to a much higher point than are the masses of Maryland and Virginia, before they establish what every State ought to do—bureaux of agricultural statistics and authorize geological surveys. Such measures will be among the rich fruits of systems of education, better adapted to the pursuits and business of the classes who are now dazzled and content with every scheme to increase and diffuse military knowledge and the science of blood-letting, but who would not give a dollar to enable the farming community and their sons, on leaving school, to judge of the elementary constituents of their soil and the plants that grow in their fields—of the mechanical principles involved in the structure and hanging of a gate, or the form of a road, or a bridge, or the anatomy or diseases of a horse or a cow—no, not a dollar! Some demagogue of *party*—no matter *what party*—would denounce all such knowledge as not practical—as a whistle not worth its cost. Just as the meanest carrion-crow can pluck at the fairest fruit, so can such men denounce and render unpopular all plans to lay deeper and wider the foundations of useful, popular, *civil* intelligence. Quite otherwise, if you can give to your scheme a tinge or an odour of *blood*! How long has it been since men—farmers, we believe they lived in Carroll county—*petitioned the Legislature of Maryland against all expenditures for agricultural and geological surveys!* Will somebody send us their names? But a better time is coming. The people are beginning to throw off demagogues and to think for themselves. We shall see—shall we not?—at the next meeting of the Maryland State Agricultural Society some movement on this subject.

THE BREAD-FRUIT TREE.

THE earliest account of the Bread-Fruit is by Captain Dampier, in 1688. "The Bread-Fruit," says this navigator, "grows on a large tree, as big and high as our largest apple-trees; it hath a spreading head, full of branches and dark leaves. The fruit grows on the boughs like apples; it is as big as a penny loaf when wheat is at five shillings the bushel; it is of a round shape, and hath a thick, tough rind. When the fruit is ripe it is yellow and soft, and the taste is sweet and pleasant. The natives of Guam use it for bread. They gather it when full-grown, while it is green and hard; then they bake it in an oven which scorseth the rind, and maketh it black; but they scrape off the outside black crust, and there remains a tender thin crust;

and the inside is soft, tender and white, like the crumb of a penny loaf. There is *neither seed nor stone* in the inside, but all of a pure substance, like bread. It must be eaten new, for if it be kept above twenty-four hours, it grows harsh and choky, but it is very pleasant before it is too stale. This fruit lasts in season *eight months* in the year, during which the natives eat no other sort of bread kind. I did never see of this fruit anywhere but here. The natives told us that there is plenty of this fruit growing on the rest of the Ladrone Islands; and I did never hear of it anywhere else."

The scientific men who accompanied Captain Cook in his voyages, came home with the most enthusiastic ideas of the Bread-Fruit. Dr. So-



[Bread-Fruit Tree.]

lander calls it "the most useful vegetable in the world," and urges that no expense should be spared in its cultivation. The mere idea of bread, the most valuable food of man, growing spontaneously, was doubtless calculated to excite attention—almost, perhaps, as strongly as the subsequent description of the poet:

The Bread-Tree, which, without the plowshare, yields
The unreaped harvest of unfurrowed fields,
And bakes its unadulterated loaves
Without a furnace in unpurchased groves,

(1002)

And flings off famine from its fertile breast,
A priceless market for the gathering guest. *Byron.*

But, after all, the Bread-Fruit Tree has not, hitherto at least, answered the expectations that were entertained. The Banana is more easily and cheaply cultivated, comes into bearing much sooner after being planted, bears more abundantly, and is better relished by the negroes. The mode of propagating the Bread-Fruit is not, indeed, difficult; for the planter has only to lay bare one of the roots, and mound it

with a spade, and in a short space a shoot comes up which is soon fit for removal.

Europeans are much fonder of the Bread-Fruit than negroes. They consider it as a sort

of dainty, and use it either as bread or in puddings. When roasted in the oven, the taste of it resembles that of a potato, but it is not so mealy as a good one. [Penny Magazine.



[Bread-Fruit, Flower and Leaf.]

SUGAR, AND ITS EFFECTS ON MAN AND ANIMALS.

BY JAMES H. FENNELLS,

Author of "A Natural History of Quadrupeds," &c.

SUGAR is one of the most ancient productions of India. Its European names, sugar, sucre, &c. are evidently derived from the Sanscrit *suk-khar*, and sugar-candy from *suk-khar-kund*. The cane is most extensively cultivated in the West Indies; and it was not until lately that it was introduced into the East Indies, but it has spread rapidly there, and the climate all over India seems perfectly adapted to it. The canes of the West Indies may be said to be almost wild and primitive, but those of the East Indies are really cultivated, and the great superiority of their Sugar affords an excellent proof of the importance of culture. When the cane had been introduced into Bourbon and Otaheite, the same superiority of the quality and quantity of the crops in comparison with those of the West Indies, on similar extents of ground, or from a like number of canes, was remarkable. Attention being called to this fact, the West India proprietors actually obtained the cultivated canes of Bourbon and Otaheite, and planted them to very great advantage about the close of the last century. In Afghanistan the cane thrives well, and yields an excellent Sugar, but the people are ignorant of the mode of crystalizing

it, and therefore they are indebted to Hindostan for their large supplies of sugar-candy. The Affghans cut the fresh cane into small pieces, which they eat as sweetmeats. The cultivation of the cane has lately been introduced into the island of Singapore, and promises to become one of its most important branches of commerce.—Some French capitalists have purchased land at Algiers, on which they are growing it. In Sicily, Spain, and Italy, it was formerly cultivated, but, we believe, its culture is now abandoned in those countries.

Saccharine juice abounds in all the maples; and, in North America, where there are large forests of these trees, a very good sort of Sugar is extensively made from two species, though the black sugar maple is by far the least productive of the two. Pursh tells us that the Americans "obtain the juice by tapping the trees in spring; warm days and frosty nights are most favorable to the plentiful discharge of the sap. A hole is made in the tree in an ascending direction, with an auger, and a spout made of elder is introduced about half an inch, which projects from three to twelve inches. The sap will sometimes flow six weeks, accord-

ing to the temperature of the weather. Troughs are placed under the spouts to receive the sap, which is carried every day to a large receiver, from which it is conveyed, after being strained, to the boiler. Lime, eggs, or new milk are added to the sap, in order to clarify it; but clear Sugar may be made without any of these ingredients. The Sugar, after being sufficiently boiled, is grained, clayed, and refined, in the same manner as the sugar-cane in the West Indies.—The sooner the sap is boiled the better. It should never be kept more than twenty-four hours. The quality of maple sugar is superior to that which is made in the West Indies from the cane, and it deposits less sediment when dissolved in water. It has more the appearance of sugar-candy. The maple-sugar is, in fact, equal to any other Sugar, and is procured with little trouble." In the north of Europe, Sugar has been obtained from other species.

The traveler, Spencer, has given us an account of the Sugar which the Circassians procure from the walnut-trees that flourish in extraordinary perfection on the Caucasian mountains. During spring, just as the sap is rising, they pierce the trunk of the tree, and leave a spigot in it for some time. When the spigot is withdrawn, a clear, sweet liquor exudes, which they allow to coagulate, and sometimes they refine it. They sometimes use, as a substitute for Sugar, clarified honey, that has been perfectly bleached in the sun.

In France, the manufacture of Sugar from chestnuts is going on very promisingly. Some of the proceeds give fourteen per cent. which is above the mean proportion extracted from beet-root.

Professor J. F. W. Johnston says that the saccharine exudation that drops from the *Eucliptus* of Van Diemen's Land is not a sort of manna as it was supposed to be, but a peculiar kind of sugar, which may be collected in considerable quantity. When crystalized from alcohol, it gave the same composition as grape sugar, but differs from it in relation to heat and other proper ties. The honey-dew, which exudes from limes and other trees, is of a saccharine nature, and Curtis says that if it could be procured in sufficient quantities it would serve well for Sugar. The Abbe Boissier de Sauvages has, indeed, described "a shower of honey-dew," which fell from a lime-tree in the King's garden at Paris. A correspondent of the *Gardener's Gazette* states that he had some beehives near a large wood of oak, where there was a honey-dew visible for thirteen successive mornings in August, and that each of these hives produced considerably more honey than those which were farther off.

Sugar has been obtained from the leaves of the ash tree, and from the stems of the birch tree, and of some species of plants.

The American cultivators of maize, or Indian corn, find that by bruising the stalks of this plant while immature, they can express an excellent Sugar. Mr. H. Colman tells us that they have already ascertained that more than 1,000 lbs. weight of sugar can be obtained from a single acre, and he has no doubt that double that amount would eventually be procured by proper cultivation and management, the manufacture being yet in its infancy.

It is well known that Sugar is yielded largely by the roots of carrots and beet. In Russia,

there are upward of thirty beet-root Sugar factories in full operation. This manufacture is also thriving in Germany. A few years ago, Messrs. Fies and Slaneward, of Quedlinburg, Westphalia, discovered a process whereby, in twelve hours, ten pounds of pure Sugar perfectly crystalized, may be extracted from 100 lbs. weight of beet-root. The secret was immediately purchased by M. Brokhoff, of Wisburg, for 20,000 francs, on condition that it should not be used beyond the Rhine and Westphalia. A beet-root sugar manufactory has been established in Essex; and, in 1837, some refined samples of English beet-root Sugar, of good quality and color, were sold in the London market at £5 per cwt. Mr. Rootsey states that forty tons of mangel-wurzel, raised upon a single acre, yielded three tons and a half of molasses.

Sugar extracted from pumpkins is equal in every respect to that from beet-root. Potatoes, wheat, barley, beans and peas, have also been made to contribute to the "sweets of life," and have been found to yield the greatest quantity while immature. A species of *Lamaria*, containing a considerable quantity of Sugar, is highly esteemed by the Japanese, as an article of diet, after it has been washed in cold water, and then boiled in milk.

Near the base, and on the upper surface of the ovary, in the flower of the *Rhododendron ponticum* there is a minute glandular spot, whence exudes a thick, clammy juice, which, on desiccation, crystalizes into pure white and transparent sugar-candy, and the crystals, thus naturally formed in the flowers, are sometimes found to be as much as three lines in length, especially in morbid specimens that have withered without fully expanding their petals. It is remarkable that Sugar is yielded in the greatest quantity by plants previous to their attaining perfection, or after they have had their flowers plucked off, or have had their assimilating powers affected by disease or injury. Even in the human being, suffering under certain morbid states, Sugar is found to be secreted by the system. In the *Medico-Chirurgical Transactions*, second series, vol. viii. Dr. Bence Jones has written on Sugar discoverable in the blood of persons laboring under the disease of diabetes, and it is well known to be pretty largely contained in their urine.

In all parts of the globe, mankind evince a fondness for Sugar, which, in many cases, proves wholesome to the constitution. Mr. Montgomery Martin observes that—

A small quantity of Sugar will sustain life, and enable the animal frame to undergo corporeal and (as I can add from personal experience) mental fatigue better than any other substance. Often have I traveled with the Arab over the burning desert, or with the wild Afric through his romantic country, and, when wearied with fatigue and a noontide sun, we have set ourselves down beneath an umbrageous canopy, and I have shared with my companion his traveling provender—a few small balls of Sugar mixed with spices, and hardened into a paste with flour. Invariably have I found two or three of these balls and a draught of water the best possible restorative, and even a stimulus to renewed exertion. During crop-time in the West Indies, the negroes, although then hard worked, become fat, healthy and cheerful. In Cochin-China, the body-guard of the King are allowed a sum of money daily with which they must buy sugar-canes, and eat a certain quantity thereof, in order to preserve their good looks and *embonpoint*. There are about 500 of these house-

hold troops, and their handsome appearance does honor to their food and to their royal master. Indeed, in Cochin-China, rice and Sugar is the ordinary breakfast of people of all ages and stations; and they not only preserve all their fruits in Sugar, but even the greater part of their leguminous vegetables, gourds, cucumbers, radishes, artichokes, the grain of the lotus, and the thick fleshy leaves of the aloes. I have eaten in India, after a six months' voyage, mutton killed in Leadenhall Market, preserved in a cask of Sugar, and as fresh as the day it was placed in the shambles. In the curing of meat, a portion of Sugar is often mixed with the salt and saltpetre. The Kandians of Ceylon preserve their venison in earthen pots of honey, and after being thus kept for two or three years its flavor would delight Epicurus himself. In tropical climates, the fresh juice of the cane is the most efficient remedy for various diseases, while its healing virtues are felt when applied to ulcers and sores. Sir John Pringle says the plague was never known to visit any country where Sugar composes a material part of the diet of the inhabitants. Drs. Rush, Cullen, and other eminent physicians, are of opinion that the frequency of malignant fevers of all kinds is lessened by the use of Sugar; in disorders of the breast it forms an excellent demulcent, as also in weakness and acrid deluxions in other parts of the body. Dr. Franklin found great relief from the sickening pain of the stone by drinking half a pint of syrup of coarse brown Sugar before bedtime, which he declared gave as much, if not more relief, than a dose of opium. That dreadful malady, once so prevalent on shipboard, scurvy, has been completely and instantaneously stopped by putting the afflicted on a sugar diet. The diseases arising from worms, to which children are subject, are prevented by the use of Sugar, the love of which seems implanted by Nature in them. As to the unfounded assertion of its injuring the teeth, let those who believe it visit the sugar plantations and look at the negroes and their children, whose teeth are daily employed in the mastication of Sugar, and they will be convinced of the absurdity of the statement.*

Dr. Willis imputed a corrosive quality to Sugar; but in disproof of this notion, Dr. Slare has related, in the *Philosophical Transactions*, No. 337, that his grandfather had, all his lifetime, been in the habit of eating, at his breakfast, a great quantity of Sugar spread upon his bread and butter, and that he used also to put Sugar into his ale and beer, and even into the sauce he ate with his meat. When eighty years of age, he had all his teeth strong and firm, able to crunch the hardest crust, and free from all pain or soreness in his gums. In his eighty-second year one of his teeth dropped out, and, soon after, he lost another, which was one of the front teeth: in fact, all his teeth dropped out in two or three years; but, what is most remarkable, they were replaced by the growth of a perfectly new set. His hair was at that time of a very white color, but it now became much darker. He enjoyed good health and strength, and died in the ninety-ninth year of his age.

The French people are great eaters of Sugar, always carrying some of it about with them in their pockets and reticules, and generally putting five or six large lumps into each cup of coffee.

M. Chossat reports that Sugar, when used as the *exclusive* or *principal* article of diet, produces quite opposite effects in some persons, according to the differences in their system; for, while it fattens some, it creates bile which induces a diarrhoea and a wasting of the solids in other persons. The celebrated Bolivar had, by fatigue and privations, so injured the tone of his stomach, that he was unable at times to take

any other food than Sugar, which, in his case, was easy of digestion. His personal friends assure us that in some of his last campaigns he lived for weeks together upon sugar alone as a solid, with pure water as a liquid; but, probably, in nine hundred and ninety-nine cases out of a thousand, this diet would soon have brought the person adopting it to his grave; for, on those whose digestion is feeble, a large or exclusive allowance of Sugar adds to their grievance, because the excess of nutriment, not being generally absorbed by their weakened system, becomes converted to bile, and causes great debility and wasting of the body. In seventeen experiments made on dogs, M. Chossat observed that, when the sugar diet fattened them, there was a general tendency to constipation meanwhile; and, on the contrary, when it produces an excess of bile in other dogs, their bowels were relaxed. Why English children suffer in their digestion after eating largely of sugar-plums, comfits, &c. is chiefly owing, however, to those delicacies being composed of the refuse of starch-works, mixed with plaster of Paris, pipe-clay, or chalk, and having, indeed, as little Sugar as will suffice to give them a palatable sweetness, and they are often colored with gamboge, and sometimes with red lead, verdigris, and other mineral poisons.

Everywhere, the beasts of the field, the birds of the air, the reptiles, fish, and insects, are found to have a great liking for Sugar and honey. Mr. Martin says he has tamed the most savage and vicious horses with Sugar, and has seen the most ferocious animals domesticated by being partly fed upon it. The tamers of lions and tigers owe their power over them chiefly to a judicious use of Sugar and other sorts of sweets, and also of lavender-water, and various other perfumes, of which feline animals are remarkably fond. In the sugar season, in the West Indies, the horses, mules, and cattle soon acquire plumpness and strength by partaking of the leavings of the sugar-canes, after the manufacturer has done with them. In Cochin-China, the elephants, buffaloes, and horses are all fattened with Sugar. We learn from the "Memoirs of Dr. Edward Cartwright," (1843,) that that ingenious man used to fatten sheep on Sugar. To birds this diet proves so nourishing, that the suppliers of the European poultry-markets find that Sugar, along with hemp-seed and boiled wheat, will greatly fatten ruffs and reeves in the space of a fortnight.

[Jour. of Highland and Ag. Soc. of Scotland.]

HORTICULTURAL EXHIBITION.

BY T. MACKELLAR

WITHIN old Eden's walls methinks I stand,
While sin is not, and innocence and love
Make earth the counterpart of realms above,
And streams of joy flow through the happy land.
The blooming beauties of earth's varied climes
Together here in sisterhood have met;
Their Latin names would spoil my Saxon rhymes,
Else, I might have them here in order set.
These fruits and flowers of every shape and hue,
And bees, and honey in its virgin comb,
And peaches, pears, plums, grapes, and apples too,
I fain could wish were safely at my home.
Oh that an Eve would wander near my seat,
And bid me rise, and freely pluck and eat!

The Plough, the Loom, and the Anvil.

VOL. II.

NOVEMBER, 1849.

No. V.

ON THE TRUE SOURCES OF PROSPERITY IN AGRICULTURAL AND OTHER INDUSTRIAL PURSUITS.

A DISCOURSE PRONOUNCED BY

J. S. SKINNER,

At Newtown, on the 2d October, 1849, on the invitation of the Bucks County Agricultural Society.

How is it, my friends, that you have called upon one who can scarcely make bread for himself to discourse to you,—practical farmers,—of that great art—the mother of all the arts—on which, directly or indirectly, all civilized people depend for their subsistence? Am I, say you, exaggerating the vital bearing of the pursuit, which you have associated to improve, on all the other classes and occupations of life? Is it not from the land that all must derive the tools of every art, and the means and elements of every social comfort? Only imagine for a moment the cultivators of the soil to be stricken from the circle that makes up the great family of mankind; or the plough and the spade, the hoe and the axe, with the very art of using them, to be altogether lost, as have been some of the fine arts of antiquity, and contemplate for a moment the dismal state into which society would at once relapse!

All other arts disappearing with yours, famine and pestilence would pervade the land. Your great and populous cities, the proud and busy seats of all the various employments of social life, would fall into irretrievable decay and ruin. Your halls of legislation—your courts of justice—your school-houses, and the houses of the living God, would be deserted. In the haunts of industry and commerce, the tracks of loathsome vermin would obliterate the foot-prints of useful labour, of eager speculation, and disgusting avarice; and commerce itself, the great instrument of civilization, begotten of agriculture and manufactures, would perish, in want of the materials which they alone can supply; and finally, over the cultivated fields which now yield their golden harvests to the scythe, dense forests would resume their dominion, filled with beasts of prey in rivalry with savages, leading, like themselves, a precarious and miserable existence—dying of hunger, or gorged with blood!

Such, my friends, are the consequences that would infallibly ensue the annihilation of your industry, and of yours only; for while all others depend on it, all others are comparatively superfluous. With the loss of your implements and the art of using them, civilization itself would languish and expire, as if all nature were struck with one universal paralysis. In contemplation of such consequences, you will allow that I have not exaggerated the essential bearing of agriculture on all other classes and pursuits; and will, I trust, therefore, excuse me from descanting on the somewhat hackneyed theme of its antiquity, its dignity, and its importance!

Dispensing then with all further preface, and coming at once to our subject, let me ask you, my friends, after so much of anxious effort, after all that

has been written—after fairs for forty years, to exhibit the greatest quantity and excellence yet attained in the production of crops, and the form of animals, and the structure of implements and machinery, *what has been the actual progress, and what is the general state and condition of agriculture in Pennsylvania?* For, believe me, we must not be dazzled and satisfied with holiday shows of pampered stock, imported or bred by the opulent or the amateur farmer—meritorious and useful as it is to import or to breed such—neither should we be deceived into self-complacency and dreams of progressive and general melioration, by accounts of heavy crops on patches of land made by farmers, young or old, to win cups of silver or paper diplomas, scattered by some high-sounding institutes, at this season, like autumnal leaves over the land. For that matter, we may go back more than a quarter of a century for some of the largest products on record of all our most important staples. All these things, however, do well to keep up a wholesome excitement—a sort of moral ventilation in the agricultural world; and farmers deserve, while they benefit by, this sort of diversion, if it serve not to delude and draw them off from the true question, which lies at the bottom of every inquiry into their rights and condition as a class.

We ought, in fact, to have in every election district a farmers' club, holding their monthly conversational meetings, as auxiliaries to county societies, and in every county a branch of a great State society; and in all our country schools, the course of education should have direct reference to the great industrial pursuits of the American citizen; and all this will come about as the natural fruit of the policy I am inculcating in "*The Plough, the Loom, and the Anvil*;" but, mark me, *never without it!*

These annual gatherings and exhibitions of the followers of the plough encourage sociability, and lead to the interchange and diffusion of intelligence and neighbourly feeling, while they serve, also, in their way, to dissipate ignorance and its inseparable companions, prejudice and intolerance. But, let me admonish you that, after all, the great question which still recurs to every man who gives his heart as well as his head to the subject is—what are the signs and what the securities for well-assured, deep-rooted, wide-branching improvement in the art, as indicated by *reasonable and steady remuneration to labour and profits to capital employed in agriculture?* And that is the problem, and that alone, which I came here, with the humblest appreciation of my own capacity, to discuss! For, in sober earnestness, what can I tell you that you do not know, in mere matters of practice?—as for instance, about the manner and the importance of draining your land of all superfluous moisture; which you all know makes, as does the cornerstone of the building, the very first step in every well-devised system of improvement. Would it not be a matter of presumption in me, in the wake of such men as Darlington, to dwell on the value of lime, to be followed and supported by that best of all, because combining all fertilizers, barn-yard manure? Need I descant on dairy husbandry to Pennsylvanians, the makers of the best butter in the world—or at least in the United States? Shall I describe to you the various breeds and best forms of domestic animals, and how the best degenerate with us for want of that steady and remunerating demand for the best, which elsewhere and everywhere leads to the highest skill and excellence in every department of human industry? Were I to venture on any mere practical suggestion, it would be to intimate, that, of late years, the public mind has perhaps been drawn off too much from the importance of straining every nerve to accumulate, and turn every putrescible substance into manure, to go abroad in search of artificial stimulants—that the mind of farmers has been too much dazzled by accounts of exorbitant crops, on small spots, without reference to cost; and their attention

too much captivated by the sight of sleek and pampered stallions and fat bullocks; while they have comparatively neglected the more important but less striking objects of *the most perfect tillage*, and the highest degree of attainable economy in the *structure of farming implements*. For a highly important, perspicuous, and demonstrative essay on the great operations of preparing your land for the reception of seed, and on the deposition of the seed when it is so thoroughly prepared; I feel it to be my duty, in our present relations to each other, to refer you to the last number of "The Plough, the Loom, and the Anvil," which I have here the pleasure to present to your society, and where you will find the whole subject philosophically and practically discussed, and illustrated by diagrams, that place the matter in a light so clear that, as I have there said, "he who runs may read."

To these few practical hints, might be added the strong persuasion, that Pennsylvania farmers have sacrificed millions, to their proverbial partiality for the large, short-lived, heavy feeding Conestoga horse, for farming purposes, too exclusively—even where he might, with obvious economy, be substituted by the longer lived mule, and the more patient and *edible* ox. But our time is too precious to detain you here, with a question so often and so elaborately discussed in our agricultural periodicals. For views of it, also, in all its aspects, I may refer you to the journal already named, and will only add, that in a national point of view, it is well worthy of inquiry, how much every superfluous horse diminishes the production of *meat*, and in that way lessens the return to the land of the refuse of its products; thus doubly abridging the means of human subsistence. As an item of individual economy, in agricultural management, I can tell you from personal inquiry and observation, that were you to compel the New England farmer, whose opinion it will be admitted is worth something in all such cases, to use horses in place of oxen, for hauling or ploughing on his farm, he would, on a view of that item alone, say—*Then take my land*, and let me go to where people have the sagacity to see that when you can no longer employ an animal for your benefit, it is better to put it in the harness-tub than to give it to the buzzards. Hence it is, that among our friends "down East,"—and especially in the best cultivated portions of it—you never, or very rarely, see a premium offered for a horse. A farmer will keep one to carry his family to meeting, over those excellent roads always to be found where the loom and the anvil are near to the plough, and in the week when hauling, to hitch on ahead of his oxen.

It is the great boast of Pennsylvania, comprising about as many acres as the six New England States together, that she supports a population less than they, by about 500,000, but then, *she feeds 100,000 more horses than all these six States united!* Supposing her to supersede 50,000 of them with oxen, and yet retain 50,000 horses more than are to be found in all New England, I leave you to calculate how much beef could be reared and fattened, for feeding men, on the 300,000 acres now dedicated to the feeding of these 50,000 horses thus substituted by oxen, supposing these horses to consume the produce annually of six acres of oats at $33\frac{1}{4}$ bushels to the acre!

And here, again, this question of the extent to which the use of horses supersedes the production of butchers' meat, (a problem well worthy of careful analysis,) prompts me to suggest, that it would be well for your Society, and all industrial associations throughout the Union, to urge upon their State Legislatures respectively, the establishment, at every seat of government, of a *Bureau of Statistics*, as has been lately and very wisely done in Louisiana, and very wisely placed under the superintendence of Mr. DE Bow, the able editor of "The Commercial Review." Such a bureau in every State, would at once supply the lawgiver with data to enable him to

develope and protect, with better knowledge of his subject, the various interests committed to his charge. How, in fact, can any government be wisely *administered*, in ignorance of the very elements with which it has to deal—its mineral, agricultural, and manufacturing capabilities—the extent of its waste and its cultivated lands, and the wealth that might be realized from its forests, its fisheries, &c.?

For State purposes, the decennial returns collected by the general government (with a want of fulness and accuracy that smacks strongly of carelessness, to say the least for the objects contemplated) are altogether inadequate—nor can they, perhaps, be made with accuracy, without more efficient co-operation of State authorities, which might well be made accessary for these as for other political purposes: and moreover, may not the State sovereignties be well ashamed, if not afraid, to acknowledge a servile dependence on the central government to do for them what their local interests require, and their local institutions enable them to do better for themselves? Let, then, all agricultural societies unite in demanding from the general government the establishment in each State, of a *normal school* for the preparation of teachers in agriculture and the practical arts and sciences connected with useful civil pursuits, on the general plan of the military schools now supported chiefly by the landed interest; and let them demand, as I have already said, of the State governments, the institution of *bureaus of statistics*, which might also take charge of the statistics of all their public works, in which the State is interested as stockholder or sponsor.

Much better would Congress be employed in erecting a monument to Washington, in the establishment of a bureau as recommended by him, to enlighten the government in respect of its agricultural resources and interests, than in rearing perishable piles of stone and mortar, vain memorials, when built in honour of one whose fame already extends to the utmost verge of civilization, and will endure as long as the love of liberty shall remain unextinguished in the hearts of men.

The feeling that prompts such memorials cannot be too much respected, as emanations of pure and grateful patriotism; and long may they serve to adorn the cities in which they point their spires to the skies; but as a means to extend and perpetuate the name of WASHINGTON!—as well might we attempt to swell the tides of the ocean, by flinging on its bosom the crystal drops that sparkle in the morning sun on the bosom of the rose! Such expedients, originating in barbarous ages, before the invention of letters, and often prostituted to the purposes of tyranny and fanaticism, suggesting the memorable lines—

Where London's column, pointing to the skies,
Like a tall bully, lifts its head and lies—

might yet do well enough to eke out the celebrity of a lucky politician or a merciless hero stained with blood; but for such men as WASHINGTON and FRANKLIN—men sent of Providence to snatch the sceptre from tyrants and the lightning from the clouds, their memories need but the use of types and a free press, and for the rest—History may be left to do her office.

But let us return, my friends, in search of that worm—that mining moth—which in the old States is gnawing at the vitals of the tree of agriculture, giving it, not the venerable and yet hearty look of a green old age; but presenting it to the view of the anxious observer, “sicklied o’er” with that sad aspect of premature decay which you have seen some valued friend take on in the prime of manhood, when struck inwardly with some deadly disorder.

Resuming, then, the inquiry as to the actual condition and prospects of Pennsylvania agriculture, after so many efforts to assure for it gene-

ral and progressive improvement, and going back to the formation of the Agricultural Society of Philadelphia, including all their volumes of essays by such public-spirited patriots and farmers as Worth, and West, and Buckley, and Ingham, and McAlister, and Morrison, and Moore, including the practical writings of Lorain, and more recently the zealous and intelligent labours of Tatem, the valuable edition and addition of Doctor Emerson to the Farmers' Encyclopedia, notwithstanding all the costly, well-selected, and valuable importations of animals by Col. Powell and others, let me again warn you, that it is not a sleek imported bull, nor a pampered stallion, nor a square-built Dishley ram, nor a no-bone pig, that will, any one of them, or all united, answer this important problem—by far the most important, if not the only question worthy of the consideration of the statesman or the farmer, as I have already said, is, as to the real foundation, the *law* of agricultural economy. Let us not be drawn off in admiration of this rich man's farm, or of that man's pet stock, as evidence of increasing knowledge and prosperity; but let us look around and abroad over the whole commonwealth, and let the inquiry be in regard to the community as a whole, not so much whether men *produce* more, but do they find a *better market* for what they do produce?—for supply is sure to follow adequate demand. Do men live in better houses themselves, and their cattle? Is labour more diversified, and are all classes able to consume more of what each class produces? Are orchards throughout the State more extensive, more numerous, and better cared for? Your enclosures more substantial and perfect? Are your swamp lands cleared up, and boggy lands more thoroughly drained? Are the farmers over the State making more of potatoes, and carrots, and cabbages, and things that, being sold close to the plough and the harrow, sell by the ton; in lieu of exhausting crops that, being sent to a distance, must be sold by the pound and the bushel? In a word, are your young people coming earlier together in holy wedlock, and your population increasing and contented; and school-houses and churches becoming more and more numerous, for these are the infallible tests of a prosperous community? Alas! here and there it is that improvement may be seen; but, on the other hand, here and there, and almost everywhere in the old States, deterioration is obvious.

We are told, on the authority of a candid and intelligent inquirer before the Revolution, that wheat, in many parts of the province of New York, yielded a larger produce than was common in England. Upon good lands about Albany they reaped from 20 to 40 bushels to the acre. "The latter quantity," said he, "is not often had, but from 20 to 30 bushels are common," and this with such bad husbandry as would not yield the like in England. Does Albany county now average 10 bushels of wheat to the acre? In what other department of industry has there been such deterioration? And why is it so in agriculture?

As to Pennsylvania, the same American writer remarks, "In the productions commonly cultivated, wheat is the grand article of the province. They sow immense quantities about the latter end of September, rising from two to three bushels of seed to the acre, which on good lands yield from 25 to 32 bushels per acre; on fields of inferior quality, or such as are almost exhausted by yielding corn, they get from 15 to 25 bushels."

Is it not well worthy of remark, as connected with the subject of this discourse, that the rate of decennial increase of population in both these great States, with all their magnificent natural resources, has been constantly falling off for the last fifty years; and though the decline in that respect has been not so marked in Pennsylvania as in New York, and neither of them comparable with what has occurred in Virginia and South Carolina, free-trade States, yet here, in Pennsylvania, it is the more remarkable, in

consideration of her magnificent agricultural and mineral capabilities, with her expanded lake-coast and noble rivers draining thirty millions of acres of naturally superb land; and then so remarkable for the water-powers these rivers present, as if pointed at by the finger of God himself, for the domestic manufacture and consumption of every thing that her farmers can supply or require! Now the average product of wheat in New York is under 15 bushels; that of Indian corn not exceeding 25 bushels; and of potatoes less than 100. The obviously careful and impartial author already referred to gives the following account of the produce of 16 acres of land on the Hudson, "the soil a light, thin loam, of reddish colour, on a lime-stone rock, which had been rejected by several new settlers."

The first year, according to his statement, it produced of potatoes 687 bushels to the acre; second year wheat, 32 bushels; third year potatoes, 531 bushels; fourth year wheat, 37 bushels; fifth year barley, 45 bushels; sixth year peas, 39 bushels; and seventh year clover was sown, and left an excellent pasture, which was reckoned as profitable as any other piece of land on the whole plantation.

These were crops from virgin soil, but without manure. How does the average of that State or this, compare now with the produce then, notwithstanding all the societies formed, and books written, and, in New York, money distributed and Institutes endowed with large annual donations in cash, and their transactions printed and distributed at the expense of the State? In 1845, the average produce of the State of New York, of the same articles, has been put down at wheat 14 bushels per acre, rye $9\frac{1}{2}$, potatoes 90, peas 15. Now look at all the other arts and industries, except that of cultivation. Have they not all improved and advanced, notwithstanding our policy always fluctuating, but, as General Jackson said, always "too much subject to the policy of the British merchants." Why should we not have improved in the practice and productiveness of agriculture as we have in ship-building and house-building, and in all the manufactures, and all the arts, in the prosecution of which men come together and combine their forces, their capital, and their talents, instead of dispersing and flying from each other, as has ever been and still is the case in agriculture? Does it not show that there is something rotten in the state of Denmark; some blighting influence, some defect in the *law* of the case, which retards the development of resources more various and abundant than ever was showered by the bounty of Providence on any other people? Has the fault been with yourselves or your teachers? Alas, my friends, with sorrow, somewhat akin to shame, I admit that (I speak alone for myself) the fault *has been with your teachers! We began at the wrong end!* We may be likened to the farmer who, seeing the fruit of high promise dropping prematurely from the tree, would attempt to cure the evil, and restore it to life and vigour by washing the body, and pruning the branches; forgetting that a canker-worm is gnawing at the root, which must first be discovered, cut out, and destroyed, and that being done, health, and vigour, and fruitfulness will ensue. Our great mistake has been in endeavouring to find out and teach you only how to become *producers*; without giving a thought to the great problem;—how we should raise up close around you *prosperous consumers, to take what you are sure to produce, if sure of adequate reward!* Had we bestowed the same time and the same labour in endeavouring to teach you to bring consumers to your side, thus furnishing a market on or near the land for the products of the land, the result would have been widely different.

Agriculture, my friends, has never made progress in the absence of a consuming population, nor has it ever failed to improve when the consumer was brought, as recommended by Mr. Jefferson, to take his place by the

side of the producer. The sandy wastes of Belgium have been converted into the richest fields of Europe, by a policy directly the reverse of that which has exhausted the rich soils of New York, and Maryland, and Virginia, and Carolina, and is now exhausting Kentucky, Tennessee, and Ohio. In Belgium the consumer and the producer are side by side, or close at hand, and the farmer saves all the cost of transportation, and thus is he enabled to return to the land all the refuse of its products, and the land increases in its power from year to year, with steady increase in the value both of land and labour. That country grows in population more rapidly than any in Europe; it has 350 inhabitants to the square mile, while Pennsylvania, from which people are flying off, has only 37, and yet we rarely meet with a Belgian emigrant, because the whole policy of its government tends to enable its people readily to exchange their products with each other, and does not, as is the case with ours, compel them to look to distant markets, wasting in the work of transportation far more labour than was employed in the work of production, exhausting the land, and compelling the owner to fly to other lands to be again exhausted!

Look around, my friends, through the world, and see where agriculture makes most progress, and you will find it to be in those countries in which population most abounds, and in which there exists that diversity of employment which brings the plough, the loom, and the anvil into the closest proximity—New England, Old England, and Belgium. Look again and see where it is that agriculture goes backward, and you will see that it is in lands of diminishing population and wealth, and of little diversity in the pursuits of the people—those in which the population is most exclusively agricultural, the plough, the loom, and the anvil being widely separated by notions of free trade, and forbidden, by “too much subserviency,” as General Jackson said, “to the policy of British merchants,” to take their places by the side of each other—as in Virginia, South Carolina, Mexico, Spain, Portugal, Sicily, Egypt, India. India abounds in rich lands that she cannot cultivate. So do Mexico, Sicily, Egypt, and all the rest, because the labour of clearing and draining the rich lands is greater than can be borne when the cultivators are compelled to depend on distant markets, as they must in that case raise wheat, or cotton, or some other article that will bear keeping, and of which the earth yields pounds or bushels instead of tons, and will therefore better bear distant transportation. Hence a friend at Montgomery, Alabama, told me that he had in vain offered \$20 an acre to get two hundred acres roughly cleared for the plough! Give to the owners of such lands a consuming population, near at hand, to diminish the cost of transportation, and they may raise turnips and carrots, of which the earth yields by hundreds of bushels, and then they and their lands will grow rich together.

I pray you to bear in mind that “the *first thing* that is to be paid by land is transportation. If that be so great that it will not leave enough to pay the wages of cultivation, the land will remain uncultivated.

“The *second thing* that is to be paid is wages. If transportation and wages eat up the whole product, the land may be cultivated, but it will pay no rent; and as the *price* of land is determined by the amount of *its rent*, or surplus product, it can then have no market value.

“The *third thing* that is paid by land is rent; and that is the surplus that remains, after the payment of transportation and labour.

“It will be obvious to all of you, that the man who cultivates land must derive from it food, and clothing, and shelter for himself and his family—that is, he must have wages for his time—and if he cannot have that, he will remove to some other place where he can have them. *That* is, then, a constant quantity. The variable quantities are transportation and rent,

and the former is always the first to be paid. Whatever is deducted from the expense of transportation is added to the rent, and whatever is added to the expense of transportation is deducted from the rent, and it is because railroads usually diminish the cost of transportation that land rises in value." Railroads help to build factories, and factories help to build railroads, and all such establishments conspire to insure profits to the cultivators of the soil.

The railroad enables the farmer to save a part of the cost of transportation, of which cost time makes a part, and his lands accordingly improve in value. Next the furnace, the coal-mine, the rolling-mill, and the cloth factory bring the market near his door, and now his lands double in value, because he saves all the cost of transportation, and all the manure, and the land and its owner become rich together. This, however, is but a small portion of the gain of the farmer, in consequence of the diversification of pursuits, resulting from bringing the loom and the anvil, the furnace and the factory, to take their places near to the plough and the harrow. The coal-miner makes a market for prop-timber to be used in the mines, and for rails and sleepers to be used for the making of roads, and for lumber to be used in the construction of houses, and the farmer is thus enabled to clear his land with large profit, whereas, without such demand, his best lands might and would have remained encumbered with timber, because, as in the case of my friend in Alabama, the cost of clearing it would be more than it was worth when cleared. The spare labour of his sons and himself, and of his horses, that must be fed whether employed or not, is employed in hauling the timber to market. His straw, hitherto almost valueless, sells for almost as much as before he could get for his grain. His daughters find demand for their services; and thus the presence of a consuming population enables him to obtain his cloth, and his iron, and his fuel, in payment, more or less directly, for timber and labour that before were wasted, and nearly the whole is profit, while his land goes up doubling, trebling, and quadrupling in value.

Look around, I pray you, my friends, and calculate how much labour is wasted in your immediate neighbourhood for want of that regular demand which is produced, winter and summer, by the proper diversification of labour. Look again, and see how great is the difficulty of obtaining assistance in harvest, because of your inability to provide demand for labour at other seasons. Had you a great consuming population near you, engaged in making cloth or iron, or in mining coal, you could at all times command the necessary aid, but now it is a day's work to find a good labourer to assist you in securing your grain, and much is liable to be lost for want of that aid. So it is at the South, and for the same reason. Pertinaciously determined to be agriculturists alone, and to keep the loom and the anvil at a distance from the plough and the harrow, the planters lose millions of dollars for want of aid in gathering their cotton or their sugar-cane. An extensive sugar planter lately told me, that it was always matter of rejoicing when the worm diminished the demand for labour in the cotton-field, because it enabled the cultivator of sugar readily to secure his crop.

If you desire evidence of the effects resulting from bringing the consumer to take his place by the side of the producer, pay a visit to Schuylkill county; but go not now: it is almost in a state of desolation: two years since it was filled with prosperous producers of coal and consumers of food, the produce of the plough. The tariff of 1846 is closing the factories and furnaces and rolling-mills of the Union, and the demand for coal has so far diminished, that numerous mines are closed, and the demand for labour is so reduced, that miners and labourers are now becoming potato-growers—changing from the relation of consumers to take the place of rivals to the

farmer—for bread is the first necessity, and must be dug directly from the earth, when men are denied the power of making other things to give in exchange for bread. Schuylkill county possesses the labour-power and the machine-power requisite for sending to market 65,000 tons of coal, worth a quarter of a million of dollars per week, or thirteen millions of dollars per annum, all of which would be given in exchange for food, or for clothes, which represent food or wool—the products of agriculture—or in exchange for iron, which again represents food and clothing—or for the use of horses, or railroads and canals, which also represent food and clothing; and thus the whole of these thirteen millions would go ultimately into the pockets of the farmer and the planter; and hence it is that I am inculcating, with all my mind and with all my heart, the propriety of drawing the loom and the anvil, close to the side of the plough and the harrow, as tho indispensable beginning, and sure foundation, *for all certain and reliable improvement in agriculture*. Schuylkill county will this year send little more than five millions' worth, and yet the cost to the community is precisely the same as if the whole thirteen millions' worth of coal had been produced. The labour is there, and must be maintained. The steam-engines are there, and must be kept in order. The houses are there, and must be kept in order. The railroads and the canal are there—the labourers are there, and must be supported. Every thing is there except the demand for labour, and for want of that the valley of the Schuylkill suffers a loss in coal alone to the extent of eight millions of dollars in this single year, almost every dollar of which would be expended for food and clothing—the products of the land. That, however, is but one part of the loss. The valley is becoming studded with idle furnaces, and idle furnace-men and idle labourers, who should be getting out ore, and assisting to convert ore and coal into iron, and here we have a further loss of millions of dollars' worth of labour, all of which falls at last upon the planters and farmers of the Union, for all would be absorbed in the purchase of that which the land produces; and thus, my friends, do you not see how the men who follow the plough and who wield the scythe are benefited by, nay how indispensable to them, is the prosperity of diversified and prosperous pursuits in their immediate vicinity? It is probable that few of you may have leisure to go so far to see these things; nor is it necessary, for they, alas! are to be seen in every part of the Union. Of the numerous furnaces at Danville, but one, I believe, is now in blast. Of all the rolling-mills in the Union, for railroad iron, not one, I believe, is now at work. One of them is close at hand across the Delaware, and if you desire to understand the working of the free-trade system, I would recommend you to pay a visit to the fine establishment of Mr. Peter Cooper, at Trenton, that so recently gave employment to hundreds of working men. On arriving at his factory, you will find it closed, and if you ask for his lately prosperous labourers—consumers of food—you will find them unemployed, and unable to make wages by aid of which to purchase food and clothes: for, as I have told you, as all other pursuits depend for employment directly or indirectly on the land and what it supplies, chiefly by cultivation, so do the wages of labour, in all other pursuits, go ultimately back to pay for the products of the land. When next you go to Trenton, you will find that most of these discharged labourers have sought the West, there to become the producers of food, and that from being your customers they have become converted into your rivals; and here, my friends, you will find the cause of the slow progress, if not the stationary or retrograde condition of agriculture and value of land, notwithstanding all the associations that have been formed, and all the volumes that have been written, and

all the silver cups and spoons, and "Transactions" and paper "diplomas," that have been distributed for their advancement, for the last fifty years.

It is not so much, let me repeat, that you need information to teach you how to *produce*—what you need is a *steady and remunerating market!* Only bring that stimulus to bear steadily, and all the rest will follow as certainly as effect will follow cause, throughout all nature. Nature, it was said by philosophers, "abhors a vacuum," and if the policy of the country were such as to open demand, the vacuum thus created would be sure to be filled. Common sense—the very instinct of self-interest—will be sure to do the work. Hence it is that the cultivators of the soil are peculiarly, and above all classes, benefited by protection to American industry in all its forms. It is *the want of that* which banishes, year after year, tens, and even hundreds of thousands to the far West, there to become producers of food—your competitors, instead of being active and prosperous customers to the farmers of Pennsylvania, and other of the old States: the consequence is, that there is a perpetual redundancy of all that you can make, seeking a market in Europe; and on its way to that market, it fills Philadelphia, Baltimore, New York, and Boston, and thus breaks down those who, like ourselves, would have preferred to remain at home, and thus it is that swarm after swarm is driven off into the wake of those who went before, to perform for you the same operation. Your market is stocked with a superabundant supply of every thing—you are left without motive to devise the means of augmenting your crops by increased diligence and ingenuity, and still you ask, why is there no general all-pervading improvement in the art and practice of agriculture, as in other arts? And will you continue for the next, as you have done for the last fifty years, to expect steady and progressive melioration by the occasional and fitful efforts of agricultural societies and exhibitions? by the production of heavy crops from single acres, and by laying masses of fat on single bullocks?

As I said before, the disease is not on the surface nor in the branches, it lies at the root of the tree, and there, to be effectual, your remedy must be applied.

It is this absence of avowed, direct, positive protection to domestic industry in all its branches, that provides a constant supply of emigrants from among our native population, nine-tenths of whom would never have sought the West from choice. In addition, we shall this year add 300,000 to our population by the immigration of foreigners, and every man of them will, by the next year, go to raising food for himself, and a surplus to send to market; for the demand for labour in the mines and furnaces and mills and factories is now far less than it was three years since, notwithstanding a vast increase of population in the meantime. The consequence is, that the new States are filling up with unnatural rapidity, and the result must prove disastrous to the farmers of the old States. The desertion and abandonment of the old States is premature and unnatural—superinduced by an unnatural and suicidal policy. In the order of nature the bees wait until the hive is crowded—until, in fact, the heat of it, in consequence of its thickened population, becomes intolerable, and then only does the hive send off its surplus inmates to seek subsistence in the nearest field that will afford employment and support. Our policy is such as to force the bees, by a cruel disturbance, to swarm prematurely, and so our people are driven away from fields which they have no motive to improve, and from rich lands that they have no inducement to drain; and water-power, and beds and mines of coal and iron, all unused, to raise corn and meat in the virgin lands of the West, which, when raised, they cannot consume, and can only sell by swelling the surplus of the old States, and then for not more than will pay the expenses of cultivation and transportation; leaving for themselves not as much as, under a wise and protective policy of govern-

ment, they might have made in other employments; and thus it is, the lands of the old States are exhausted and their owners left without material, means, or motive to improve them. Thus it is, that notwithstanding so much writing, and so many cattle shows, and so much fitful, ill-considered, and impulsive effort at recuperation, there is yet no general progressive average increase and improvement of agriculture over any large district of country where there is no diversification of labour. We are always brushing cobwebs from the branches, when we should be working, let me once more repeat, to keep all safe, and sound, and vigorous at the root of the tree.

Look around, I beg you, and see for yourselves? You can see that the mines, and mills, and furnaces are closed. Do you see that any new ones are needed? You can see that the men who, three years since, worked in the mines and furnaces, and built more mills and furnaces, eating the potatoes and the corn of the farmer, and wearing the wool of the farmer and the cotton of the planter, and consuming of all freely because of his ample ability to pay for them; these men are now unemployed, and as their employment at the loom and anvil ceases, so ceases their ability to buy and consume the products of the plough, and nothing is left then but to take themselves the handles of the plough, to keep soul and body together. "Seeing is believing," and seeing and believing that such is the course and condition of things, do you wonder that I, animated all my life by passionate regard for the landed interest, should endeavour to bring into close and prosperous neighbourhood to each other, the plough, the loom, and the anvil?

My friends, every man knows—for every man can see for himself—that there is going on a wonderful increase of our population, and that every day, under the working of the present system, increases the ratio of producers to consumers, and that the consequence of a continuation of this state of things must be a vast increase in the numbers of *sellers* of food, with a corresponding decrease in the number of buyers of food, attended with a great reduction in the price of the commodities to be sold. With any such reduction, *agriculture must go backward*. The case is as plain as that 2 and 2 make 4. The farmer cannot make improvements when he has to give much food, much of the products of the plough in exchange for what he must use and consume in his family.

Look back to the tariff of 1842, and you will see what were the consequences of a course of action such as I have described. We are now again closing our factories and furnaces, and buying largely of foreign food, in the form of cloth and iron, and paying for it in evidences of debt. So did we in 1837, '38, '39, and '40. That course brought upon us the foul stain of repudiation. Like causes will always lead to like effects. If you desire, my friends, to understand how the present tariff is working with reference to the interests of your State, look to the fact that the wrought iron descending the Susquehanna canal has fallen from above eleven millions of pounds last year, to less than three millions this year, and the pig iron (all representing the products of the land) has fallen from fifty-one millions to twenty-seven millions. And then look to the great fact that the State itself is purchasing foreign iron for the road now making for the avoidance of the Inclined Plane. The people of Columbia, and Huntingdon, and Centre, and Schuylkill, and Montgomery, who should be getting out ore, are idle, and the people who should be making charcoal or getting out coal are idle, and the horses and wagons are idle, and the idle people are unable to buy food from the farmer, or cloth from the manufacturer, and those who can afford to go are going west to raise food, that they may enter into competition with yourselves; and you, the farmers of Pennsylvania, are buying foreign food, in the form of iron, to make your own roads. You

drive your customers west to become rivals, or you drive them into poor-houses there to be supported at your expense, and you tax yourselves to raise money for the purchase of iron made with food raised in Poland or in Russia, by serfs who are bought and sold by the hundred head, like so many cattle and sheep, with the land on which they labour, for as much black rye bread, called *pumpernickle*, as will keep soul and body together! Is not this suicide? Is it wonderful that farmers are poor, and that lands are poor? Is it wonderful that your farms are as large and as unproductive as they were thirty years since? Let the policy, then, which withdraws from American labour protection from competition with the serfs of Russia, be called the *pumpernickle policy*!

Land, at the distance of a few miles from New York, in West Chester county, is selling at several hundred dollars an acre, because the railroad has diminished the expenditure between the consumer and the producer, and yet that land is not now worth as much as would be that of Bucks county, if you had, as you should have, consumers among yourselves. Look what railroads have done in England, and remember that the road only enables the farmer to go to market, while the mill brings the market to his doors.

An English writer says that between Croydon and London his attention was continually attracted by the high order and beautiful appearance of the market gardens through which the railway runs. This land seven years ago was occupied as grass land, for ordinary purposes. Its gross produce was under \$40 an acre, and the rents paid not more than \$12 or \$15. Now that it has been converted into market gardens, well grubbed and well drained, it yields \$300 an acre and rents for \$35 to \$40. Gardening precedes farming, and is the best school for teaching lessons in practical agriculture. It is there that men are forced to see the necessity for thorough draining, thorough tillage, heavy manuring and thorough weeding, and clean, good seed, and that embraces nearly all that is to be learned.

The same writer relates the following anecdote:—"An agriculturist and large land-owner in passing through these grounds expressed aloud, in the railway carriage, his admiration of the fine order and beautiful appearance of the crops, and his surprise at the entire absence of weeds. An opposite passenger, who had entered at Newcross, broke in upon him by saying—"Weeds, sir, of course, you cannot see any, there are none; I pay £8 (\$40) an acre a year for some of that ground, and it costs me as much more for manure, and do you *think I could afford this and grow weeds?*"

Why is it, my friends, that you can afford to grow so many weeds? Simply because you have made no market on the land for the products of the land.

Farmers of Old Bucks, it is high time that you should look into these things for yourselves, and permit yourselves no longer to be ridden by political demagogues, "booted and spurred," whose sole object is that of living at your expense, altogether careless of the effects that may result to your interests from the measures they advocate. For myself, I have no political aspirations. The residue of my life will be, as the prime of it has been, devoted to the welfare of the tillers of the soil; and I tell you, and challenge contradiction, that the plough and the harrow never have flourished at a distance from the loom and the anvil, and they never can: for the land must become unproductive when the profits of production are swallowed up in the costs of transporting and converting the products the farmer has to sell, into the commodities he has to buy, and thus fails to return to the land the refuse of its products.

Let partisans squabble as they may for power and for place, and with that end let them dispute for ever about State banks and banks of the United States, and sub-treasuries and Wilmot provisoos; but the protection

or abandonment of *the domestic industry of the people* in the various branches for which a bountiful Providence has supplied the materials, and in its conflict with the pauper labour of Europe, is a great national question—too high, too sacred to be draggled and begrimed in the foul mire of party. Let all good men unite to withdraw it from that arena in which passionate advocates appeal to blind tribunals, and prejudice holds the scales of justice. Yes, my friends, this is a great question which men may consider and decide according to their best judgments, without any forfeiture of mere party allegiance, about which the most honourable and well-meaning men are so enacious; for who dare say, that principles advocated by Jefferson, by Madison, by Monroe, by Adams, by Jackson, are not republican principles—not democratic republican principles? Mr. Jefferson, high on the list of democrats, said, we “must now bring the manufacturer to take his place by the side of the agriculturist.” Jackson, whose orthodox democracy no one will dispute, said—In place of feeding the paupers of Europe by sending abroad for manufactures made by their labour, we must feed our own. And here I may go further and quote from one of General Jackson’s favourite cabinet counsellors. Our neighbour Governor Mahlon Dickerson, a member of the great sanhedrim of democracy, as late as the autumn of 1847, in his opening address at the American Institute at New York, went “the whole hog” in favour of direct, unequivocal protection, pronouncing a tariff for revenue to be a “modern discovery;” or rather, said he, emphatically, a “modern *invention!*” and but for the schemes and machinations of partisans, so it would be universally considered and treated. Thus I have shown to every man who desires to examine the question—not as a politician, but as a statesman; not as a partisan, but as an American citizen—that he is at full liberty to follow the truth wherever it may lead, without giving any man the right even to question his party fealty.

As Jefferson and Jackson thought, so thought all our Presidents, until we reached him of Kinderhook. He thought it better to feed the paupers of Europe, and let our own take care of themselves, if they could, and if not, they might starve.

It may not be amiss, my friends, for you to compare the names of those who have believed with Thomas Jefferson, and all the patriots of the Revolution;—with those who have advocated the policy which has given us the tariff of 1846, and judge between them:—

Protective Presidents.

Washington,
Adams,
Jefferson,
Madison,
Monroe,
J. Q. Adams,
Jackson,
Harrison,
Taylor.

Free Trade Presidents.

Van Buren,
Polk.

Common sense taught the people of the colonies that they needed protection against the evils of the colonial system, as it is now teaching the people of Canada that they never can prosper under the existing free-trade system. They now desire protection, for that is the leading object with every Canadian, as you may see in the address of the British league. They see that land on the south side of an imaginary line is worth three times as much as that on the north side of it, and they see that the cause is to be found in the fact that the farmers of the United States have a home-

market, which they have not. They have free trade, and they are ruined. They desire annexation, that they may enjoy even such protection as we have, and thus we see that they are animated to action by the very same reason that governed Washington, Franklin, Jefferson, Adams, and all the great men of our own Revolutionary period.

And now, farmers of Pennsylvania, I want to remark to you, in conclusion, that wherever certain causes are seen invariably, or with much uniformity, to be followed by the same results, this visible consequence of effect upon cause, is termed "*the law*" of that case. Thus of the laws of nature as applied to inanimate objects, we speak of the law of *gravitation*, the law of *motion*; and then again of the law which regulates the processes of animal and vegetable economy: so in the case of agricultural economy, to which I have been referring, there is undoubtedly a natural *law* that regulates and governs it, and which, as you value not only your pecuniary welfare, but as you should pride yourselves on understanding the true sources of prosperity for the community to which you belong, it behooves you to find out and understand—for, if legislative action be in accordance therewith, agriculture will surely and steadily advance, and step by step with its advancement will be the march of every art, and of all the blessings that wait on civilization. Study that law, and you will find it in perfect accordance with the simple yet great truth which teaches that "in union there is strength." Study, then, the present course of our legislative action, and you will find that we are obtaining disunion and separation among ourselves, while seeking freedom of trade and union with foreign nations—that Will-o'-the-wisp which has so long amused and misled Maryland, Virginia, and the Carolinas, persuading them to pride themselves upon their exclusive addiction to a *single pursuit*, and sending away to distant looms their wool and their cotton, leaving their rich mines of coal and of ore undisturbed in the bosom of the earth, and their mountain streams to go on leaping from fall to fall, their echoes resounding in the wilderness, while they are wending their way, unemployed, to the ocean, as has been the case from the beginning of creation. You will then, I think, arrive at the conclusion that without a change of policy agricultural deterioration must continue.

He calls in vain on Hercules for help, who will not help himself. You may go on holding cattle shows, and giving premiums to have proved again what has been proved a thousand times. You may have cows to yield milk by the gallon, and sows to farrow pigs by the dozen, but as "every swallow does not make a summer," neither will these extraordinary productions, in isolated cases, insure general progress and improvement in the art or the practice of agriculture.

If you would better understand the law of which I have spoken, let me advise you to read an American work, which, now that it is praised in Europe, Americans will begin to study, as farmers are now, over the whole country—crying for *guano! guano!*—a substance of which I distributed some barrels in Maryland, twenty-five years ago, with every thing from Humboldt, and Ulloa, and Vauquelin, necessary to be known about its properties and effects—the work to which I refer, at once simple and profound, is "**THE PAST, THE PRESENT, AND THE FUTURE,**" which, instead of obscuring the subject it professes to explain, and rendering, in the mind of the inquirer, "confusion worse confounded," reveals *the law of the case*, and political economy, heretofore to plain minds only abstruse, and to minds stuffed with "too much learning" incomprehensible, ceases to be worse than a sealed book, to those who are slaves neither to this theory nor to that; and whose only wish is, to overtake and embrace the naked truth.

Finally, having invited me to address you, you will allow me to declare,

in all sincerity, my conviction that if the tendency of legislative action be to diversify employment, and thus concentrate population in mutual support and dependence, then will you witness a general amelioration of agriculture ; and civilization and the arts which she produces for her own use and embellishment will all flourish in social proximity together. But if, on the other hand, it shall tend to diminish the number of pursuits, population will be dispersed and impoverished, and however the vast extent and natural abundance of a country may conceal its existence and its ravages for a time, you may feel assured there is yet a worm gnawing at the root, that will lead finally in our blessed country, as it has done in others the most favoured of God, to decay and ruin—to anarchy, slavery, and despotism. Let me conjure you, then, to force your public men to the enactment and steady maintenance of a policy that will draw the prosperous consumers employed in other industries, close around the plough and the harrow. Then it is that you will have a land abounding in schools and churches, and blessed with knowledge—with religion—with wise laws, and liberty well secured because—*well understood!* Otherwise, in the more expressive words of Holy Writ, your cities will “be wasted without inhabitant, and the houses without man, and the land be utterly desolate.”

ANALYSES OF POTATOES.

THE tubers of the common potato, the *Solanum tuberosum* of botanists, as analysed by Prof. Henry and J. W. Hardy, of Va., contain of

	Hardy.	Henry.
Water	74.00	73.12
Starch	12.50	13.30
Woody fibre	7.50	6.79
Gluten, albumen	1.00	(Albumen) 0.92
Sugar	2.40	3.30
Fatty matter	0.60	1.12
Salts	2.00	1.40
Volatile poisonous matter	—	0.05

Payen and Persoz found *Diastase* in the neighbourhood of the bud, and Otto discovered *Solanin* in the bud itself. To the presence of the latter is attributed the ill effects from the use of germinated potatoes, as food.

It thus appears that the chief components of the potato are starch and water, and according to Payen these always exist in an inverse proportion, where there is most starch there is least water, and *vice versa*. The following are some of the results obtained by him :—

	Starch.	Water.
Rohan Potatoes	16.6	75.2
Large yellow	23.3	68.7
Scotch	22.0	69.8
Irish	12.3	79.4
Siberian	14.0	77.8

Mr. Hardy also obtained the following results from an analysis of the ashes of the common and the sweet potato, the *Convolvulus batatas* :—

	COMMON POTATO.		SWEET POTATO.	
	Roots.	Tops.	Roots.	Tops.
Silica	6.8	12.5	5.4	10.5
Potassa	52.5	45.3	54.6	46.8
Soda	0.5	0.7	0.8	0.6
Lime	2.0	2.5	3.5	4.0
Magnesia	4.5	2.0	4.3	3.4
Oxide of iron and alumina	1.0	6.0	1.5	7.0
Carbonic acid	12.5	12.0	6.0	8.0
Phosphoric acid	12.5	9.6	15.5	11.0
Sulphuric acid	7.0	9.0	8.4	8.7

Connected with this, we give the result of the investigations of the celebrated English chemist, Mr. Kemp, upon the *potato blight*. Like the epidemic which still lingers amongst us, its cause is in a great measure obscure; but like it, the indications lead us to look for it in atmospheric phenomena, and the changes effected on animals and vegetables by variations of temperature and moisture, and to this conclusion the deductions of Mr. Kemp lead.

1. "That the morbid affection consists of *a premature tendency to assume the organic changes which are consentaneous with, and essential to the process of germination.*

2. "That the presence of fungi and insects do not account for these changes, and cannot therefore be considered as their exciting cause.

3. "That the cause must be sought for amongst *those agents which induce the process of germination* in seeds and tubers.

4. "That further analytic investigation is necessary, in order to elicit the mode of action of such agents, as well as the peculiar conditions under which their agency becomes developed."



"POPULATION MAKES THE FOOD COME FROM THE RICH SOILS."

"FROM the extensive works now going on, on the meadows below the town, the beautiful lawn of green carpeting bids fair to be very much extended during the next season. We have scarcely ever beheld a more beautiful landscape than a portion of these luxuriant meadows now present. Our farmers, we perceive, all over the country are just waking up to the immense value and importance of their low lands. Ditching and draining, and burning bogs are among the numerous signs of improvement to be seen almost everywhere."

We cut the above from "The Herald," printed at Newton, Sussex county, New Jersey, and we do so because it illustrates so forcibly what we have been endeavouring to teach our Southern friends, *viz.*: that it is "population that makes the food come from the rich soils." That county abounds in iron ore that would be useless but for its proximity to the anthracite coal region of Pennsylvania. With the opening of that region the ore has become valuable, and the furnaces have brought the consumer to take his place by the side of the producer, and thus have made a market on the land for the products of the land, and therefore it is that "ditching and draining, and burning bogs," are everywhere to be seen. Let our Southern friends follow the example of the people of New Jersey—let them learn to convert their fuel and their ore into iron—let them learn to convert their food and their cotton into cloth—all of which they will speedily do if they will but take for themselves *protection for the sake of protection*, rejecting absolutely the fraud of protection for the sake of revenue, (which Governor Mahlon Dickerson, of New Jersey, pronounces "a modern discovery, or rather *invention*,") and we shall soon see them holding meetings for discussing the means of increasing, and not of reducing the product of their great staple, cotton. Why form societies to learn how to make labour more productive, of commodities whereof we now make more than we can sell? Is it not a solecism in agricultural economy, for the same people to be holding fairs to improve agriculture, and conventions to devise the best means of reducing the products of agriculture?

ON SUBSOILING.—ON FARMERS' LIBRARIES.

SUBSOILING, says the reader—I am tired of seeing the word. So you may be, but when you see that an essay on the subject has won the prize of a club of practical farmers, in a country where it ought to be at least as well understood as in ours, is it not worth while to look into it? And besides, ought not farmers to be posted up in every thing new, as it appears, on great points in their profession? Some, at a loss for a better excuse, will say—Oh! what time has a farmer for reading? And pray what time has the physician or the lawyer—even those in the fullest practice? The great William Pinckney, who pocketed and booked his \$20,000 a year, yet found time to read every line from the pen of Byron, and Scott, and Bulwer, and even to study Johnson's big Dictionary, as an amusement. The story is, that this great jurist and forensic orator, unequalled in our country, and unsurpassed in any country, died with a volume of Bulwer in his hand, just wet from the press.

Go into the office of any distinguished, or even undistinguished professional man, and you find case added to case, even faster than they are added on his docket, to contain his library, ever swelling with volumes of new theories or new discoveries in the line of his profession. Now how is it with the farmer? There you shall find, from year to year, and these chiefly for the use of the good housewife, the Holy Bible—perhaps Calmet's history thereof—"The Pilgrim's Progress," "Enfield's Dictionary," minus one cover, and perhaps a few leaves, and maybe an old copy of "Goldsmith's Rome" and "Scott's Reader," and some book of pictures for the children—reserving for himself, as above all most worthy of respect and obedience, *the leading paper of his party*, whatever that party may be! Yes, these party men, among tillers of the soil, you will always hear speak of "my party"—"our party"—believing implicitly in whatever their organ tells them—to-day it is a whale, and to-morrow smoke—while all the time *the party owns them*, and they are made, without knowing it, to work as wilful horses are made to work in blind bridles, for the benefit of those who sometimes drive, sometimes ride, and sometimes *lead them*!

He cannot easily change his habits, who has grown up to man's estate in ignorance of the amusement and instruction to be found in print, on the subject of agriculture and its kindred studies; but that should not prevent any man from providing for his sons, while *their* habits are being formed, something besides and better than *party newspapers*. All should take at least two agricultural periodicals—one in, and one out of his State, and all should lay aside, say as much of his crop as may be saved from being wasted by gleaming with one of friend Pennock's horse-rakes, to be laid out annually in good books, allied to agriculture—\$20 to lay the foundation, and \$10 annually after. Less than many now expend for the elevation of small men to high places would well provide wholesome and fresh food for the *mind* of his family, and is it not as worthy of attention as the grosser wants of the sensual man? But why talk to people whose heart is fat and their ears heavy, and who shut their eyes lest they see with their eyes! If the rising generation are not provided with such wholesome food, it shall not be for want of exertion and industry on the part of at least one labourer in the vineyard.

But to return to the subject of subsoiling, from which we have been drawn in the fulness of our anxiety to see better provision made for the intellectual cultivation of those who are destined to be cultivators of the soil; all we have to say is, that this essay attracts us, and is published because it explains the reason of the operation, and shows *why* it is that it answers well in some soils and fails in others. It is the want of knowledge to discriminate that often discourages, if it does not disgust the inquirer, and leads him to renounce as altogether worthless that which is so only under special circumstances. This essay alone will show to the reader the necessity of better preparation at school for his business—a preparation that would enable the young farmer to anticipate results which experience may teach him, it is true, but teach him at a cost that makes it dearly bought, even without taking into the account the years of perplexity and the ridicule of wiser men that he must encounter—an expense that would pay five times over for the education and the books that would have enabled him to avoid it.

Having been lately called upon to read a lecture before a geological society on the advantages of some knowledge of geology and chemistry to the farmer, we will refer to this very case, among others, to show that such knowledge would aid the young farmer in deciding even where he should, and where he need not *subsoil*!

SUBSOIL PLOUGHING.

A PRIZE ESSAY OF THE WENTWORTH FARMERS' CLUB.

BY THOMAS KEIR SHORT.

[From the London Farmers' Magazine.]

As for the advantages derived from subsoiling, much diversity of opinion exists, and, on the whole, very little is yet known. Some practical farmers stoutly maintain that it is labour lost, and money thrown away; others equally competent to judge say that it is one of the most beneficial operations in farming, almost equal to a good manuring, and no system complete without it. Thus we see practical men differ: both may be right, and both may be wrong.

I can produce instances where the use of the subsoil plough has been attended with the greatest benefit, and others where it has been so much money thrown away. Many of its advocates are too much prejudiced in its favour, being under an impression that because it has been of great use to them, it must, as a matter of course, be the same to others; but this does not follow, for, like many other operations in agriculture, science must be called to our aid. Analysis is requisite; and chemistry solves the question.

A friend of mine subsoiled ten or fifteen acres of land which had been previously furrow-drained 30 inches deep—the land termed strong clay—the subsoiling being performed across the drains: two lands were left undone: the land sown with wheat and red clover. The crop looked well all winter, except one end, which had been much damaged by game; the subsoiled part always keeping in advance of the other. The crop is now reaped, but not yet threshed. The produce of the subsoiled part is laid by competent judges at fifteen bushels per acre over that undone, and was ready for the scythe ten or fourteen days before the other, which is of much consequence if a wet latter harvest sets in. The red clover on the two lands unsubsoiled attained the height of ten inches, from the thinness of the corn, and was shaken out for the horses; whereas that on the subsoiled land was only four inches high, from the luxuriance of the wheat crop.

Another friend subsoiled a similar-looking piece of land a few miles distant. The greatest care was taken to perform the work well. The results were that no difference in the crop was perceptible, and that it was time and money thrown away.

These two experiments gave sufficient evidence to the contending parties for and against subsoiling to back their opinions; for in these two cases both were right and both were wrong, both being ignorant of the cause.

We will now examine the cause chemically, which will elucidate the question.

Strong land contains large portions of a mineral called alumina, which is a very compact adhesive substance, possessing strong attractions for water and ammonia. An analysis of the soil where the experiment was successful was found to contain 23 per cent. of alumina, the soil resting on the new red sandstone formation. The other soil where no good was derived, contained 45 per cent. of alumina, and rested on one of the worst of clays—the lias.

I was induced to try these analyses from having seen a paper, some time back, in "The Journal of the Royal Agricultural Society," by Mr. Thompson, who is of opinion that no permanent good can be derived from subsoiling land containing more than 43 per cent. of alumina. I am inclined to think that 40 per cent. is the greatest to which the per centage should

go; and as an instance of this, that the less alumina the land contains the more permanent the advantage.

Land containing less than 35 per cent. of alumina, when ploughed after being subsoiled, and having produced a crop, turns up in a much better state, approaching more to a strong loam than clay, and is much easier to work; and I am of opinion that the cost of subsoiling is saved in the labour alone.

I have been much surprised to see strong land on the lias formation, which had been subsoiled, turn up the year following as compact and tenacious as ever, without a crack or any other mark in it to denote that it had ever been moved; and this can only be accounted for by the presence of alumina in such large quantities, which being divided into very minute particles, having a strong attraction for each other and for water, causes them to unite as firm as ever.

On the light or sand land I have seen great advantage derived from subsoiling also; but in this case we cannot allow alumina to have any thing to do with it, consequently we must look to other causes. At the same time I have seen failures equally as great on light soils as on strong clays.

As an instance of the benefit derived from subsoiling sand or light gravelly land, a level field was ploughed 7 inches deep with the common plough, and followed by the subsoil plough 14 inches more; two lands were left undone in the middle of the field; the operation was performed in November, 1845. In 1846 the land was sown with Swedish turnips on ridges, the ridges crossing the subsoiling, the whole of the field was manured alike with bones and fold-yard manure; nothing particular was noticed in the turnips until the bulbs began to form in the autumn, when it was evident those on the subsoiled land were growing the fastest.

Late in the autumn, in crossing the field, the two lands undone had the appearance of a hollow or valley across the field, being much less in both bulbs and tops, and four tons per acre less in weight. The barley also showed the two lands conspicuously, and the seeds this summer have stood the dry months much better than where the land was not subsoiled. I could give some other evidence, but I do not consider it requisite.

We will now examine the cause of success and failure on light soils.

It is well known that a soil may be rich in mineral constituents requisite for the growth of plants, but from the state of combination in which these minerals are found cannot be assimilated by plants as food; consequently, in their present state, are of little use. Science teaches us how to bring these constituents into use, and the more we know of it the simpler we find the process.

These minerals in their present state of combination are termed "*dormant*," and in many cases only require exposure to the air; for it is well known that the hardest rock in time becomes disintegrated by the action of the air, which is principally attributed to the presence of carbonic acid in the atmosphere. It is to the influence of the atmosphere to which I attribute a large portion of the benefit derived from subsoiling sandy soils, but not entirely; as it is well known that the laws of gravitation carry all bodies heavier than the atmosphere downwards, consequently much of the valuable properties of manure are carried down into the subsoil, particularly a porous one, by percolation, and are after placed beyond the reach of the roots of plants ordinarily cultivated.

By the process of subsoiling, the air is admitted to a greater depth, and in larger quantities than before; the carbonic acid of the atmosphere comes in contact with a larger portion of these dormant constituents of the soil, and by chemical action forms them into a state for the assimilation of plants.

I am also fully convinced that much depends on the time of year when the operation of subsoiling is performed, particularly on sandy soils. As an instance of this, during the process of subsoiling early in January, the operations were stopped by frost; other circumstances occurred to prevent the completion of the field until the end of March; the field was sown with turnips, which told to the row where the stoppage took place, the others not being any better than the part left undone. I have often observed that the greatest number of failures on sand land have taken place from this circumstance.

The best period for subsoiling is from the end of October to the beginning of January, as the land has then the full benefit of frost and snow.

Some persons run the subsoil plough down every furrow; this I do not think is necessary, and it prevents many who can only command three or four horses from performing the operation at all. The system I recommend is to clear the land of weeds and rubbish as early in the autumn as possible, plough it once over, drag it deeply, then throw the land into winter ridges with the common or double mouldboard plough as deep as possible; after which run the subsoil plough down each furrow to the depth of fourteen or sixteen inches; nothing more is requisite until the spring, when it is prepared for turnips. If it is intended to subsoil for barley, the operation must be performed as soon as the turnips are eaten off; but for wheat the old system of the subsoil plough following the common plough down each furrow is all that can generally be done.

I am inclined to believe that many of the cases of wheat being thrown out of the ground by frost, may in a great measure be lessened by using the subsoil plough, as I have observed that it never occurs to such an extent on land that has been subsoiled.

It is caused principally by the expansion of the water contained in the soil during the process of freezing; and as most farmers are anxious to have what they term a firm bed for thin wheat, the light soil which covers the grain expands when it becomes frozen from the resistance of the firm soil below; but where subsoiling has been practised, the water has a much better chance of escaping by being able to percolate the soil more rapidly.

Also the deeper a soil is ploughed, a much better chance is given to the various crops to withstand dry weather, as it is *well known to the gardener that the more he stirs the soil between his crops in dry weather the less water they require*; so it is with agricultural crops on a larger scale. Some soils contain a pan or bed of hard concrete a few inches below the surface; and although the land may be free from springs, is often very wet from the surface water being unable to percolate. On such soils as this, the subsoil plough is invaluable.

I knew a part of a field of this description this spring which had been subsoiled; after the operation, between ten and fifteen tons of the hard concrete was carted off, the stones and pebbles being cemented together with oxide of iron. The operation has been successful, and the land is now as dry as possible, even after the heaviest rains.

One great obstacle to subsoil ploughing is the great draught that some of the cumbersome subsoil ploughs require; in fact, in this age of invention, it has often occurred to me that the various implement makers seem anxious to cram as much cast metal and iron into their productions as possible, as if the railroads and other branches of the arts could not consume it; also as much complication as possible is now introduced into the various branches of agricultural mechanics.

Light draught, firm workmanship, and simple construction, are the three grand points to be looked after in the construction of agricultural implements.

Many varieties of subsoil ploughs have been invented, most of which are now discarded. The best I have yet seen is made by Mr. George Cartwright, of Martin, near Bawtry, Yorkshire; it is composed of cast metal and iron, is of easy draught, three horses, on light gravelly land, being able to plough one acre per day, at a depth of 16 inches, the common plough taking 8 inches deep before it, the total depth being 24 inches. The price of this valuable implement is £5 5s. [\$26.]

Those persons who are inclined to follow the practice of subsoiling will find it to their advantage to attend to the following rules, if they wish their efforts to be crowned with success:—

Strong clay, containing more than 40 per cent. of alumina, derives little benefit from subsoiling.

The period from the end of October to the beginning of January the best. Subsoil across the drains if possible.

Work the horses one before the other; avoid treading the subsoiled land as much as possible.

Look that your men do not alter the depth to save the horses.

Use only such implements as are of the best construction and light draught.

Always see your implements tried and proved before you purchase.

ALABAMA COAL AND IRON TRADE, ETC.

I HAVE long been persuaded that it was the true interest of the South to engage extensively in the business of manufacturing. By an appropriation of the proceeds of two-thirds of the cotton crop for a single year, in the building and furnishing of factories, she could manufacture one-third afterwards, merely by repairing the wear and tear of the establishment from time to time; and thus add 100 per cent. to the annual income derived from the production of the great staple.

In addition to this, the South is better adapted, and at much less expense, to the growth of wool. I am aware that a vulgar notion prevails, that a high northern latitude is indispensable to the production of a fine description of wool; but those who have troubled themselves to inquire into the matter, know that this assumption is not well founded. The entire South and South-west, especially the elevated and hilly portions, which are regarded as unsuited to the growth of cotton, are admirably adapted to sheep husbandry. Those who have been attentive readers of our agricultural papers, or have read some of the late interesting publications upon this subject, are ready to believe what we assert. It is only necessary to offer an inducement to agriculturists by the erection of woollen factories, to obtain indisputable evidence of its truth. A few days ago, an intelligent, practical gentleman, who has had considerable experience in rearing of sheep, and who is now engaged in the business, remarked to me, that wool could be grown profitably in Alabama, at 20 cents per pound; all he required was a certain cash market, the price was a secondary matter.

The South confessedly produces the heaviest wheat that is grown in the United States, and, unassisted by manure, yields quite as much as the fresh or exhausted soils of a similar character at the North. With the exception of spring frosts, the wheat crop is equally as certain, and such a frost has blighted it but once in twenty-one years; and it would really seem that its effects could be guarded against by arresting the growth of the wheat during an occasional unusually warm winter, which pushes it forward prematurely,

so as to subject it to the influence of frost. To encourage this branch of industry, it is only necessary to erect flouring mills, and offer a price for wheat, payable in cash. To induce the erection of such mills, to any great extent, there must be a convenient and constant market for flour.

The coal trade in Alabama could be made a source of immense profit, if facilities for carrying it to market were commensurate with the demand. The coal is of the most superior quality, of the bituminous kind, much nearer the Gulf than any that has yet been discovered, and north and east of Tuscaloosa is of untold extent. Iron ore, too, of the richest and most approved varieties, is found in great abundance in the immediate vicinity of the coal, and would be made into pig metal and bar iron, if there was a foundry convenient to purchase the former.

How shall these sources of wealth be made available to Alabama? The answer is at hand. By directing capital and enterprise, so as to promote and advance them. To produce this, it is indispensable, in the language of the sagacious and profound author of "The Past, the Present, and the Future," to improve "the machinery of exchange;" that is, to lessen the expense and labour of getting to market. To induce manufacturing in Tuscaloosa, to any extent, and increase the iron and coal trade, there must be facilities in this way, far beyond those now enjoyed. A plank or railroad should be made through the coal to the iron; thence to the marble, some 30 or 40 miles in extent; and then by boats of suitable draught, there should, if possible, be constant transportation up and down the Black Warrior and Tombigbee. The former is entirely practicable; but without inquiry or examination, it has been generally assumed that the latter is not. Is the assumption well founded? Upon inquiring of several persons who have had much experience for a number of years in navigating the river between Tuscaloosa and Mobile, I was informed that if \$2500 or \$3000 were judiciously expended in removing logs and reclining trees, there would be no obstruction to the downward and upward passage of steamers drawing not more than 15 inches of water, at all seasons of the year. In many places it would be necessary to unloose the barges that were towed, and float them through separately; this would of course retard a passage, but not so much, it is believed, as to induce an abandonment of the enterprise. I was so fully satisfied from what I had seen elsewhere, that a steamer combining the necessary power with lightness of draught could be built, that I addressed a letter to the proprietors of the "Novelty Iron Works," in the city of New York, for information upon the matter, and have received from them the following answer: "A boat 100 feet long, 20 feet wide, could be made to carry an engine sufficient to tow coal barges, and to bear a moderate number of passengers, without drawing more than thirteen inches." It is scarcely necessary to say that the "Novelty Iron Works" is perhaps the most extensive iron foundry, steam engine, and general machine manufactory in the United States; and the opinion of its proprietors may therefore be relied on.

Twice the sum necessary to remove the logs and trees could be raised in Tuscaloosa, Mobile, and intermediate points, with very little trouble. Masters of steamboats could be found, whose interest would induce them carefully and judiciously to supervise and direct its expenditure in the removal of the obstructions. Mobile is largely interested in promoting a constant trade in iron and coal from the interior. It would give her somewhat more of a business air in the summer and early months of autumn. Is not her interest sufficient to induce her to give an impulse to the improvement of "the machinery of exchange?"

A. B.

We take the above from "The Alabama Planter," into which it was copied from "The

Tuscaloosa Observer," and one reason for so doing is that it contains instruction for the people of almost every portion of the Union. Alabama has coal, and New Jersey has iron and zinc, both of which would long since have been worked to a vast extent but for the system that has prevented us from making a market on the land for the products of the land. Pennsylvania, Maryland, Virginia, Ohio, Kentucky, Indiana, Illinois, and other States, abound in coal and ore, and we should be now making and using millions of tons in lieu of the tens of thousands that we now import, had not the manufacturer of iron and the miner of coal been broken down at every change in the policy of the people in the West of England. The richest soils of all these States remain untouched, because men have been driven to form new States, when they would have preferred to remain at home, to aid in filling up older ones, and as it is "population that makes the food come from the rich soils," it is to this system of depopulation that we owe the fact that these soils remain uncultivated.

DIVERSITY OF PURSUITS.

[Correspondence of the Alabama Planter.]

Sumter County, August 31, 1849.

THE advances that are from time to time making in diversifying and increasing the number of objects of Southern industry are a favourable omen of our future prospects, and when new pursuits prove profitable it is especially gratifying. That the remuneration obtained for labour bestowed on our great staple, cotton, has been too light is but too clearly manifest, and the conclusion is admitted on all hands, that a continuance in our former course of increasing the product, so as to meet the deficiency in the price, must be abandoned; but what we were to do was not so easy to decide as the fact that we were now doing very unwisely.

A few, however, determined to strike out of the beaten path of erroneous custom and try a new way. Among these are a number of gentlemen from Sumter county, with perhaps a few others from the surrounding country, who have made an essay, or rather successful effort at the turpentine business. Nothing of consequence was done, in the way of preparation, until late in the season; yet it is understood that, although the season has been rather unfavourable, from the extreme wet of a part of the summer, and nearly all the hands engaged in the business are new beginners, and all the fixtures and preparations entirely new, they will, nevertheless, gather about 150 barrels to the hand.

Moreover, a portion of them have in a good state of forwardness an establishment for distilling the turpentine. It is expected that the concern will be ready to go into operation in a week or two. The owners propose, besides working their own turpentine, to buy of others, and, as I understand, will give two dollars per barrel delivered at their distillery, which is of course as convenient to many of the producers of the crude article as possible.

The fixtures now being put up are calculated to consume twenty barrels of turpentine per day, and produce from them six gallons of spirits per barrel, or one hundred and twenty gallons per day.

How far the distillery business may prove profitable is yet to be seen; but I think it probable, with care and economy, that it will be a better business than making cotton has been for the last ten years. The whole business of gathering and distilling is in the hands of intelligent and practical men. It is true that few, perhaps none of them, have had much actual experience in either branch of the business, but they are well acquainted with all the general theory, common usages and results of it, and as bold, sensible, practical men are without strongly fixed preconceived opinions,

they are likely to adapt their modes of operation to the circumstances that surround them—make improvements on old plans if necessary, or if likely to be more successful, adopt new plans and carry them out with vigour.

For a moment, let us compare the probable results of cotton raising with this turpentine business. It is not at all probable now that the hands in Sumter or any of the adjoining counties, either in Alabama or Mississippi, will make two bales of cotton of 500 pounds each to the hand, and ten cents is as high as it will probably bring, or \$100 to the hand. The hands engaged in the cotton culture usually make their own bread and the corn fed to the horses and mules on the plantation, and sometimes all their meat, but commonly only part. The mules, ploughs, wagons, gears, and farming tools, and all the *et ceteras* of a farm, must in whole or in part come out of the cotton. Very different is the calculation of the other business. Five or six dollars will supply a hand with tools for years—one good, strong wagon and a team of four or six oxen will do the hauling for several hands, no mules to feed or gears or ploughs to buy and keep in good repair. The parties may, if they choose, raise a little corn for bread, and any quantity of potatoes. Their oxen can live in the woods when not in actual use, and the hands gather a crop nearly or quite twice as productive as cotton, and remarkably steady and certain, in a most healthy country, and free from a thousand costs and charges that attend making cotton. SUMTER.

We cordially agree with the writer of the above, but would recommend him to consider if the same labour would not erect a furnace or a factory, with results far more advantageous. Why must the cotton go to seek the loom? Why not compel the loom to come to the cotton? He brings the distillery to the pine trees that he may make turpentine. Why not haul the trees to the distillery, as he now hauls his food and his cotton to Lowell and Manchester, receiving back a pound of cotton for a bushel of grain? Common sense teaches that his interest will be promoted by bringing the distillery to the turpentine. Why, then, not bring the furnaces to the ore and the coal? He answers that he will be ruined because of the unceasing changes in the price of iron. Let him, then, call aloud for help, and Congress will afford it.

NORFOLK COUNTY (MASS.) AGRICULTURAL SOCIETY.

THIS youngest sister of the family associates to promote improvements in agriculture and horticulture made her brilliant debut on the 26th of September, under the always auspicious Presidency of Col. MARSHALL P. WILDER.

We feel called upon to give it a passing notice on more accounts than one, but especially as it was not only their maiden exhibition, but was greeted and graced by the presence of a large number of the fair sex of the county; and thus it seems always to be with the Colonel. Here we are delving night and day, labouring like a Turk to draw the loom and the anvil close around the plough and the harrow, while some of our oldest and most esteemed friends would have us keep them wide asunder—but Col. W. has only to move and the ladies flock around him, and, moving in concert, stimulate and reward him with their presence and their smiles. Let envy, or malice, however, say what they may, when that is the case, we may always feel assured that the man is about doing something good.

This Norfolk county, strange to say, was the only one in the old Bay State without an agricultural association. There, we believe, as in New York, the State gives to each county a sum equal to what its society can raise, not exceeding, however, in any case, a certain amount—in Massachusetts we believe the maximum given by the State to any one county is \$600. To return to this last-born pet of the State, here we behold, almost

without notice, and as by magic, the tree that Col. W. and his active and able associates, B. V. French, and others, planted but a year ago, is already in full bearing of the choicest fruit—like Minerva sprung at once in full panoply and in all her beautiful parts and proportions from the head of Jove. Surely these gentlemen must have discovered some new principles—some magnetic power to accelerate the processes of vegetable growth; and may it not be added, as surely, that the men, wherever found, under whose genial breath the smallest spark of inclination to foster the useful and elegant arts of agriculture and floriculture, thus blazes up and spreads far and wide, are fit to *govern States*!—for does it not prove that under their management all the resources of wealth and power would be skilfully developed and administered?

For ourselves, the idea, not now expressed for the first time, has always been that these holiday gatherings of the yeomanry of the country should wind up with a social public *dinner*—with toasts and sentiments, to call out brief remarks and repartees, all around, giving rise to that agreeable exhilaration which seems to flow so spontaneously and freely *after* the inward man has been satisfied with the creature-comforts of a substantial repast; and when men, on other occasions reserved, are prompted by compliments and friendly collisions of opinion, to take their lights from under the bushel, and putting their best foot foremost, proclaim aloud what experience has taught or reflection suggested as connected with the interests they have assembled to illustrate and improve. No part of English agricultural annals is more at once entertaining and instructive than their accounts of that portion of their great meetings which is emphatically denominated “*THE DINNER*,”—and who can read the spirited account of the one to which we are referring, as we find it in the Boston Journal, and fail to envy the pleasure of those who were participants.

“Not the least pleasing feature of the exhibition,” says *Messrs. Sleeper and Rogers*, (and we have not the least difficulty in believing them,) “was the *grand display of fine and beautiful women*! If the specimens which we saw yesterday are fair samples of the whole, Norfolk county certainly is not to be outdone in this feature of the ‘Show’ by any which we have yet seen.”

He must be one of the seven sleepers who would not be sensible to such a presence, and then for the men—the account proceeds:—

“The scene at the tables was very brilliant, in consequence of the presence of large numbers of ladies who participated with their fathers, husbands, and brothers, in the festivities of the day. We wonder not that they were eager to attend, for we never remember to have witnessed on any such occasion—scarcely on any occasion except at the Capitol—such an array of talent and celebrity. Conspicuous among the invited guests were Daniel Webster, Edward Everett, Robert C. Winthrop, Levi Lincoln, Governor Briggs, Lieutenant-governor Reed, Horace Mann, the Quineys, (father and son,) and others. There were also present Ex-Governor Hill, of New Hampshire, Hon. J. W. Briggs, of Ohio, Mayor Dearborn, of Roxbury, Rev. Mr. Pierpont, the Presidents of several Agricultural and Horticultural Societies, Hon. John C. Gray, of Boston, President of the Massachusetts Agricultural Society, Charles F. Adams, of Quincy, and many more well known citizens whom we cannot stop to particularize. A fine band of music was in attendance.

“A blessing was invoked by Rev. Dr. Burgess, and then the eatables were satisfactorily attended to.

“After this, Col. Wilder, the President of the day, called the attention of the company to the after-entertainment, in these terms:—

“*Ladies and Gentlemen*:—I congratulate you on the auspicious circumstances that attend our assembling around this board. We are not only honoured with the presence of the dignitaries of the land, who have come up to aid and encourage us in our new enterprise, but with that of the ladies, whose bright smiles and cheerful countenances add so much

to the pleasure and brilliancy of such occasions. I shall not trespass on the time which will be so much better occupied with the remarks of others, but proceed at once to offer such sentiments as will, it is hoped, elicit replies from our distinguished guests.'

"The first sentiment was this:—

"*Agriculture* :—The first of arts and the first of sciences—the mother and nurse of the human race. The Romans remembered with joy and admiration the periods when their Consuls and Dictators were taken from the plough; may our descendants have occasion to remember with pride and satisfaction the present age, when the first names of the Republic are enrolled in the list of its farmers."

What friend of the plough can fail to hail with pleasure the *sign* to be seen, in the presence of such men, coming down—down, did we say?—in coming up to recognise the *paramount importance of agriculture*; and to listen to the testimony of such men as Governors Lincoln, Briggs, Everett, and "black Dan" himself—so invincible in every field where the Constitution is to be defended, but for himself in no field more happy or more captivating to his friends, as we know, than when playing the *farmer at Marsh-field*—and then to have enlisted in the cause, that MANN among men, whose peculiar and enviable boast it is, to have *led the advance in the glorious cause of education*!—for, believe us, readers, it is *in the schools*, after all, that we must sow the seed of all enlightened and durable reform—and believe us, further, that the will and the power to establish such schools can only be realized by a people who are convinced of the truth, and willing to carry out the doctrine we are preaching in "The Plough, the Loom, and the Anvil." Yes, you must have diversified employments, flourishing and prosperous, to beget dense population, without which there can be no good school system well supported. Your tendency under the influence of wise laws, must be *centri-petal*, and not *centri-fugal*!—it must be to unite, and not to disperse yourselves and your children.

Some there are who will tell you that all government is an evil, and that laws should only have in view the beautiful and benign end of *hanging and shooting* our fellow-creatures—murderers and pirates—as sheep-killing dogs are hung and shot. Our doctrine is, that when men have emerged from a state of barbarism, and, passing through the pastoral state, have betaken themselves to the civilizing arts of cultivation and commerce, to support augmenting population, it is government which then takes the place of individual wilfulness and physical strength, and thenceforth society is to be meliorated, and all its arts and interests advanced, more or less, by more or less *perfection in the laws*! It is the laws which constitute the soul of the Republic. They are the instruments of public felicity, and their perfection depends on the *education of the people*, which is to be referred again to the diversity of employments, giving to each other mutual countenance and support, *here at home*, under a government which they themselves control, and a policy which leads to union for common welfare. With more perfect education will come more productiveness to labour, and an *increasing horror of war*.

We have no room to advert to any more of the many beautiful and instructive incidents of this fair at Norfolk—selected now because it was the *first*, and to show how much more easy it is to command thousands, where the loom and the anvil have been for years gathering close around the plough and the harrow, than it is to make up hundreds where the policy is to compel the producer to go abroad in search of his customer. Not long since, with a view to test the advantages of certain sites for manufactures, at the instance of a valued friend in the West, we made inquiries about the *price of land* near certain cities, and the answer as to Boston was—How much does the reader imagine?—\$1000 an acre in any direction, *three miles distant from the Boston market-house*! So it ought to have been

at Norfolk and Charleston, if they had not always persisted in separating the consumer from the producer, leaving the latter to lay all his eggs of one kind, and to carry them all in one basket.

But, after all, we cannot quit this subject without expressing our humble but hearty concurrence in the sentiment expressed by Governor Briggs, who said "he saw, on the present occasion, one feature of the celebration which did humble him with regard to the older society of which he had spoken so much. He saw with infinite pleasure the wives and daughters of the farmers sitting, as they ought to do, with their fathers and husbands at the table. In Berkshire they had not yet advanced quite so far, but he felt confident that the beautiful example of Norfolk in this respect would everywhere be speedily followed. The banishment of wine from public entertainments had opened the way for the presence of woman, and who was there that would hesitate for a moment to make the exchange?" Nor *will* we quit it without one more word to say:—Reader, you perceive with what alacrity great public men come forward on these holiday occasions to eat salt with the "hard-fisted yeomanry!" and to testify their devotion to agriculture! You would think it was the great burden of their thoughts—that Ceres and Pomona were the idols of their souls' worship, but—when you send them to the field of legislation, *what do they do for the cause?* They vote millions for armies and navies—for army and navy schools to teach the use of cannon and sword, and how to construct *military* roads and *gun*-carriages, to analyze *gunpowder* and to load a *mortar*!—(\$500,000,000 since the war with England in 1812—enough every year to build *seven hundred miles of railroad*!)—but do any of them move for appropriations for a great normal school in each State, where teachers might be prepared to take charge of country schools, there to teach your sons the sciences involved in the use of the *plough*, in the construction of *civil* roads and bridges for *civil* uses—the *farm-gate* and the *farm-wagon*—how to analyze *soils and grains*? No, not a man of them! That is, as the Frenchman says, *une autre chose*!—quite a different thing!—one is popular—there is something charming in the very sound of the drum and fife—something attractive in the very sight of a red coat and glittering epaulettes, in vulgar eyes—and so will it ever be until education, which alone, by throwing light upon the mind and heart, can invest men with the attributes of God himself, shall shed *its* blessings over the land, enlightening and liberalizing the public mind. Then shall we need, as now we really need, neither armies nor navies, for then will strength, consisting in knowledge and the love of peace, take the place of ignorance and the love of blood: and then shall the *plough* and the *spade* take the place of the *scaffold* and the *axe*. Let us wait and see what these gentlemen will *do* when next they meet in Congress. Let us see whether all their fine speeches are to end in—*smoke*!

"*Draining, lime and guano, in our arid and dry climate, destroy all vegetation!*"

AMERICAN INSTITUTE.

☞ "Seventy-eight tons of guano and about one hundred barrels of Kettlewell and Davison's "renovator" were landed at this place [Leonardtownton, St. Mary's county, Md.] on last Friday, for farmers in the immediate neighbourhood. Not less than three hundred tons of the former, it is believed, will be used in St. Mary's the present fall."

ON THE PARTURITION OF ANIMALS.

A Lecture on the Anatomy and Physiology of the Maternal Organs of Reproduction in Animals, with the Principles of Practice applicable to cases of Difficult and Preternatural labour, more especially in the Cow and Ewe: By JAMES BEART SIMMONS, Lecturer on Cattle Pathology of the Royal Veterinary College, London: Honorary Member of the Royal Agricultural Society, &c.

WILL some farmer-doctor favour us with his views as to the reasons why, in England, diseases among domestic animals, and especially among what we commonly call *cattle* and sheep, are so much more various and prevalent than in the United States? That such is the fact, every one must have perceived, who is in the habit of reading English journals and books on husbandry.

Here before us, is a dissertation of thirty pages, with eleven costly engravings, to illustrate the subject of *parturition* in the *cow and ewe*, which in England is attended so frequently with danger and death as to have made it a subject of much importance and discussion. Who ever hears of cows and ewes being lost in such cases in this country? True, it does happen sometimes, but so very rarely as scarcely to cause the least apprehension or solicitude, still, the subject is one which is worthy of being studied by every farmer, as are a thousand others that serve to give to his pursuit interest and variety; while some would persuade him that above all occupations his is the most monotonous and stupid. And here it occurs to us to suggest that if the farmer were represented as he should be, in all State Legislatures, by well-informed men of his own profession, they would take good care, in all cases of granting charters and privileges, to make provision for the *interests of agriculture*—as, for example, in granting railroad charters, they should require the company to provide, as is done in New England, a good, convenient, commodious, and well-appointed *station-house*, with the necessary officers and fixtures, every five miles along the road, for the accommodation of passengers and the reception of agricultural and horticultural articles—even a pound of butter or a dozen eggs. Such conveniences create business—instead of that we wait for business to create them. And how, says the reader, are you going to connect with this the study or illustration of the diseases of domestic animals? Hold on a minute—I would have a clause inserted in every charter for a medical college, that it should embrace a *Professorship, with lectures on comparative anatomy*, with the privilege of free attendance, under proper regulations, of all country people or sons of farmers who might wish to attend.

On this subject the celebrated Dr. Rush, that great lover of science and of peace, in one of the most eloquent and amiable lectures we ever read, said:—

“We are further called upon to study the causes, seats, and remedies of the diseases of domestic animals, by the duties which we owe to our country and to humanity. The products of agriculture and commerce are often lessened by a fatal epidemic, brought on by diseases which blast the character of animal provisions; and many poor families have been left to suffer all the evils of penury and famine, by the death of a single horse, upon whose labour, of a cow, upon whose milk, or a hog upon whose flesh, they had relied exclusively for subsistence, all of whom perhaps perished by diseases that might have been cured.”

Why does not the American Institute provide for such lectures?

But our purpose was merely to extract from the lecture of which we have given the title at the head of these remarks, what we find there on the *time of gestation* or pregnancy of certain animals, which it may be of importance

to every practical farmer to know, with a little more exactness than they now usually do. General tables have been, we know, repeatedly published, but we are not aware that it has been done in "*The Plough, the Loom, and the Anvil*." We were well aware of the variation of the time of gestation, as proved by the registers kept under the orders of Earl Spencer, but do not recollect to have before seen it stated, as is here shown, that it depends sometimes on the influence of *the male* partner in the business. It may be well for "us Christians" to remember, however, that there is a *minimum* fixed for the birth of at least the first healthy, full-grown offspring under which its appearance in this wicked world is bound to be accompanied with violent suspicions of premature intimacy. But as the doctor said, "It's an accident not apt to happen a second time between the same parties after lawful wedlock."

There is one more suggestion in a part of this lecture, not here embraced, which it may be useful to state for general information, and with which "the profession" are of course familiar. The lecturer reiterates the caution, that in all cases of difficult labour, with women as well as animals, artificial assistance should cease *in the intervals* of natural efforts; and should only accompany the maternal throes for relief.

"The period of utero-gestation, or length of time that the fœtus is detained in the uterus, depends upon several causes, and differs in nearly every variety of animal unless belonging to the same tribe or family. The average period that the mare carries her young may be stated as being near to *forty-eight weeks*, the cow *forty*, the ewe *twenty-two*, the bitch *nine*, and the sow *sixteen weeks*. It certainly is a remarkable fact, and one which shows the mighty power of the all-wise Creator, that, in animals placed so high in the scale of organized beings as the canine race, full and perfect development of their young should be effected in the short space of sixty-three days. If, however, we descend the scale, we shall find that this is comparatively a long period to be occupied in the perfecting of the offspring of the lower animals.

"The late and much lamented Earl Spencer has recorded in the pages of your journal his observations on the duration of gestation in no less than 764 cows; and we are much gratified in being able to say that he has thereby rendered most efficient aid to science, as well as considerable service to the practical breeders of cattle. I refer to that paper for full details, but I shall nevertheless make an extract or two in consequence of the important bearing these statements have on this part of our subject:—'From the inspection of this table,' his lordship says, 'it will be seen that the shortest period of gestation, when a live calf was produced, was 220 days. Any calf produced at an earlier period than 260 days must be considered decidedly premature, and any period of gestation exceeding 300 days must also be considered irregular, but in this latter case the health of the produce is not affected. It will also be seen that 314 cows calved before the 284th day, and 310 calved after the 285th; so that the probable period of gestation ought to be considered 284 or 285 days, and not 270, as stated in the book upon Cattle, published under the superintendence of the Society for the Diffusion of Useful Knowledge.'

"The facts here mentioned with reference to the great differences in the time of gestation cannot, even in the present advanced state of science, be satisfactorily accounted for. Dr. Carpenter, writing on the same subject, remarks that 'the average length of time which elapses between conception and parturition in the human female appears to be 280 days or 40 weeks. There can be little doubt, however, that gestation may be occasionally prolonged for one, two, or even three weeks beyond that period; such prolongation not being at all unfrequent among the lower animals, and numerous well authenticated instances of it, in the human female, being on record. Upon what circumstances this departure from the usual rule is dependent has not yet been ascertained; but it is a remarkable circumstance, ascertained by the observations of cattle-breeders, that the *male* has an influence upon the length of gestation—a large proportion of cows in calf to certain bulls exceeding the usual period, and a small proportion falling short of it. Hence we must attribute the prolongation of the period to some peculiarity in the embryo, derived from its male parent.* Alluding to the opinion which is also entertained with

* Carpenter's "Manual of Physiology," p. 478.

respect to the sex of the fœtus influencing the time of gestation, Earl Spencer observes, 'there is a prevalent belief among farming men, and I believe farmers, that, when the time of gestation of a cow is longer than usual, the produce is generally a male calf. I must confess that I did not believe this to be the case, but this table shows that there is some foundation for the opinion. In order fairly to try this, the cows who calved before the 260th day, and those who calved after the 300th, ought to be omitted as being anomalous cases, as well as the cases in which twins were produced; and it will then appear that, from the cows whose period of gestation did not exceed 286 days, the number of cow-calves produced was 233, and the number of bull-calves 234; while from those whose period exceeded 286 days, the number of cow-calves was only 90, while the number of bull-calves was 152.'

HEAR BOTH SIDES.

WE have, on various occasions, urged on the Editors of *The Union* the propriety of imitating our example, and permitting their readers to see both sides of the tariff question, copying our papers as we do theirs, but, we regret to say, our advice has thus far had no effect. A recent number of that paper has a long article devoted to the abuse of this journal, its Editor, and its doctrines, and proving, to the writer's entire satisfaction, that the farmer is to be enriched by sending from the land the products of the land, instead of making a market for them at home, thereby enriching the soil and himself, instead of exhausting it. By some mischance that paper did not meet our eye until some time after its publication, and then only in consequence of having been informed by a friend that it had appeared. Not exchanging with *The Union*, such an accident might readily occur. It is now too late to make of it at present any other than this brief notice, but on the first opportunity it shall be given, with the necessary comments, to our readers. They, at least, shall hear and see both sides. Which of our opponents will venture to imitate our example?

The editors of that journal are hard-headed pupils. They know so much that they are in danger of never being wiser than at present. We live, however, in the hope of being able to satisfy them and their correspondents, even if one of these latter be, as is said, the late Secretary of the Treasury, that "there are more things in this world than are dreamt of in their philosophy," and that if they wish to know any thing of political economy, they must endeavour to obtain some acquaintance, even though slight, with its first elements. That we do not see *The Union* more regularly has not been our fault. This journal was sent for many months, supposing that in common courtesy it might be deemed worthy of a tri-weekly at least, in exchange. The Senior Editor, our "*quondam*" friend, more than once volunteered the promise of a kindly, though it might be an "antagonistical" notice; but in the urgency of more important engagements could never find time to give it even a passing salutation, until correspondents were at last let in to denounce it and its doctrines as "absurd," "contemptible," &c., terms which we commend to the particular notice of the Senior Editor, of whom, whatever may have been our differences of estimate and opinion of certain men and measures, we should regret ever to have spoken or to have been the medium of words spoken unkindly or disrespectfully. If time and late events have rendered somewhat more identical our estimate of some exalted personages, bringing him to think with us, ought it not to admonish him that few things in this life are free from liability to change, while civility is an incumbent virtue on us all.

THE CONDITION OF THE SOUTH.

STATES.	Total No. of acres in	Acres owned.	Paid to Govern- ment for portion bought of it.	Acres remain- ing unsold, Jan. 1, 1849.
Alabama .	32,462,080	15,911,520 .	\$16,888,047 .	17,450,560
Mississippi .	30,174,080 .	15,811,650 .	16,402,691 .	14,326,430
Louisiana .	29,715,840 .	6,263,822 .	4,186,394 .	23,452,018
Arkansas .	33,406,720 .	5,942,117 .	3,769,695 .	27,464,603
			<u>\$41,246,827</u>	<u>82,693,611</u>

"This table shows some extraordinary facts that are not often considered by those who abuse the South, namely, that besides the government owning 82,693,611 acres of land, which would be sooner purchased up if their agricultural productions could be promoted; these States have paid \$41,246,827 for the lands they have alone purchased of the government; and if this sum had been invested at the average time of their payment, say 1835, in six per cent. stocks, payable semi-annually, and such dividends had been re-invested and compounded till now, it would reach a total sum to-day that would equal fully all the bona fide capital of the North invested in cotton factories and shipping. I allude to this to present a cause why the South may appear behind the North in the progress of her factories, &c.

"Cotton factories and iron forges are, however, becoming numerous. Coal mining is attracting great attention, and from the great profits arising from investments in ships, and our wonderful facilities for building, with our splendid timber on the spot, &c., it is not unlikely we shall ere long enter the lists as competitors with our northern brethren in this exceedingly profitable branch of their wealth. In Alabama our citizens are generally exempt from embarrassment, and in certain quarters large amounts of money are known to be hoarded."

We take the above from that able journal, "De Bow's Commercial Review," (New Orleans,) which we desire to commend to the attention of our readers, as containing a vast quantity of valuable information for which they would elsewhere seek in vain. We know not how any one of our readers, desirous of useful information, particularly in relation to the Southern States, could more advantageously employ the same amount than in adding this valuable work to his library; and it ought, most especially, to be in every public library in the Union.

The above table does present "some extraordinary facts." It shows that in four States there remain unsold 82,000,000 of acres, much of it the richest land in the country, while men are flying by tens, and almost hundreds, of thousands, to California, the acquisition of which was the result of a war brought on by that thirst for territory which caused the addition of Texas to the Union. We have, and have long had, land in abundance. What the land wants to give it value is population. Men are everywhere flying from each other as if from pestilence, when every man knows that combination of action is essential to the productive application of labour.

The writer of the above desires that we should calculate the price paid for land and the interest upon it, when he thinks we should find that it would prove that the South had invested in land as much as the North in factories and shipping. He forgets, however, that the price paid for land is but the representative of a certain quantity of labour, and that the people of the North have been steadily investing labour in the improvement of their lands, until they have, in some places, brought originally poor lands to a condition that enables them to obtain from one acre as much as the planter obtains from five. If he will look to this, and study what it is that has enabled them so to do, he will find that it is because they have made a market on the land for the products of the land. If, then, he will study how much the planters have wasted in the work of unnecessary transporta-

tion from the place of growth to the port of shipment, and thence to Manchester, and thence back again to the plantation, and to that add interest—and will then reflect that all this might have been saved by the pursuance of a course of policy that would have compelled the spinning-jenny and the loom to come to the cotton, and the spinner and weaver to come to the food, he will be satisfied that the amount has been more than would have placed in the South machinery for the conversion of all their cotton, were it even ten millions of pounds instead of one—and furnaces and rolling-mills that would produce iron by millions of tons—and shipping that would enable them to exchange their cloth and their iron with the producers of tea and coffee, and silks and spices, and all others of the comforts and luxuries of life with which they are now compelled to dispense, because they have pertinaciously refused to follow the course necessary to enable them to return to the soil the refuse of its products, and thus improve instead of exhausting it. The question of protection is a planters' and farmers' question, and when the planters shall *come so to regard it*, the unsold lands of the South will cease to count by millions of acres, and they themselves will cease to fly from the rich soils of old States to the poor soils of new ones, as now they do, and as they must continue to do until they shall become convinced that it is "population that makes the food come from the rich soils!"

THE MARYLAND STATE AGRICULTURAL SOCIETY'S LAST EXHIBITION.

THOUGH duly sensible of the honour of tempting invitations to fairs appointed about the same time, at other places, we felt bound by a sort of filial duty to attend the one which was to come off in our own old native Maryland: for although such exhibitions, it must be admitted, begin, with us, to lose something of their attraction, after being repeated in our view for nearly thirty years, yet was full recompense to be expected in what was anticipated of excellence in this one. And moreover, there was something not easily to be resisted in the thought of seeing there some old friends yet remaining, with whom to revive recollections of a period when, however humble now, we may have been ourselves of some account among abler and worthier performers in similar scenes then enacted on the same boards.

One has indeed only to look back to the pages of the old "American Farmer," even before the existence of any other agricultural periodical, and while yet depending doubtfully for its own existence on the hand that traces these lines, and there will be no difficulty in finding evidences of zeal in the good cause then, as ardent as now, animating patriots no less distinguished—such as Pinckney and Madison in the South, Pickering and Lowell in the East, and Peters and Powell, Lloyd and Ridgely of Hampton, and many others in the Middle States.

The pages to which we have referred, abound, moreover, in statements of crops as heavy, of hogs as prolific, horses superior and much more numerous, cows as deep-milking, and sheep as well formed and as fat as any to be seen at the present day; except, be it remembered, the prodigies in the *ovine* department exhibited by *Major Reybold and his son Clayton*, the latter of whom, though he may never hope to rise to his elevation in one respect, bids fair in this department of industry to follow close upon, if he does not overmark the footprints of his "illustrious predecessor." Truly there was hung up there to the gaze "Old Zack," and the multitude, from the yet unequalled

flock of the Reybolds, one dressed mutton of such extraordinary dimensions, such depth of brisket, such breadth of loin, and such length of body—in a word, of such amazing latitude and longitude, that had it been divested of its head and feet, (left on, it was supposed, to verify the jurisdiction of the sheep committee,) it would have puzzled the great naturalist Cuvier himself to say to what race of animals it belonged! In frame, too expanded for a hog—in weight, for a sheep, past any thing that Jacob himself ever dreamed of, or manufactured by his remarkable cunning as a breeder. But that its fat was of snowy whiteness, it might have been mistaken for a bullock of the old-fashioned, old field breed of the Elizabethan age, since which cattle have about doubled in average weight.

Our old friend John Barney, of that same ilk—in little Delaware—used to exhibit Dishleys, thirty years ago, in the Baltimore market, that then astonished the natives, but even he would have lifted up his hands in wonderment at these modern *Oxfordshires* of the Reybolds, could he have been “there to see.” The wether of their own breeding, to which we have alluded, weighed, alive, somewhere in the neighbourhood of 300!*

Aware as we are of certain influences, especially at that season of the year when farmers are selecting rams to give them lambs, and men to give them laws, we have hitherto despaired of ever getting legislators independent and firm enough to enact a stringent *dog law*, to save the flocks of Southern States from destruction; but it occurred to us, on this occasion, that when there comes to be a good sprinkling through the counties of the precious blood of such sheep as were exhibited by the Reybolds—Col. Ware—Mr. Clements—C. Carroll of “My Lady’s Manor,” and others, the united interest of so many as would then be combined, might begin to make some headway against that *canine* power which now cuts off at least \$100,000 from the sum which might otherwise be added annually, and almost as a net saving, to the farmers of Maryland. Yes, but for that baleful spirit of party, which sets each upon the watch to see the other caught inadvertently in some *unpopular* trap—some gun-tax, or dog-tax—a spirit which has stood in the way of so many reforms, and which threatens yet more direful evils to the country, the State of Maryland might, at a very trifling expense, comparatively, add an average of 5000 sheep in each county, making an aggregate addition of 100,000 to the flocks of the State. While few farmers may have the means and facilities requisite for grazing and fattening cattle, every one might add more or less to his flock of sheep, were it not for the almost moral certainty of having them *destroyed by dogs*! With a good *dog law*, and a small factory in every county, to assure the farmer of a market—even at twenty cents a pound, or less—Maryland might raise the middle or the coarse-wooled sheep, to meet the wants of both the butcher and the manufacturer; or even the fine-wooled sheep, at an *expense less* than is encountered by the Vermont farmer, by an amount fully equal to the whole profit which tempts the latter to look to his wool as one of, if not his principal staple! What infatuation—what want of energy and spirit, then, does it not evince, to deny himself the enjoyment of so great—such a palpable resource, for fear of some *mischiefs to the party*!—by the enactment of some measure of relief against an evil so general and so pestiferous! Suppose a *party* is injured, who suffers for the most part? The people?—the farmer in his substantial interests? No: nine times out of ten, the misfortune, such as it is, lights on the office-holder and the demagogue! But all this is but another of our digressions, and all will come right when thick-

* Since writing the above, we learn that, some days after the fair, it weighed 166 or 176 (we have forgotten which) pounds net.

ening population and diversified pursuits shall give rise to *appropriate* education. Be it for the reader to say how far such digressions concern the landholders of the State, and how, therefore, they may or may not be worthy of his own reflection—and so we return to the late exhibition.

In respect of the question how far such exhibitions are to be relied upon, to cure any radical defect or obstruction to the progress of improvement in the art and condition of agriculture, (entertaining and useful as they are.) we refer the reader respectfully to our views, for what they are worth, in the discourse which forms the leading article of this number; which has been published at the request of the Bucks County Agricultural Society, who were pleased to pass a resolution saying it had been “listened to with infinite satisfaction.”

In the mean time, for our own impressions as to this particular fair, they are so nearly reflected in what follows from “The Baltimore American,” soon after it occurred, that we have no hesitation in adopting it:—

“In a review of the great Fair of the State Agricultural Society, which was gotten up on so liberal a scale, which was so attractive, meritorious and gratifying in all its features, and which has just passed off so happily, the first impulse is that of grateful recognition of the industry and zeal of the President of the Society, and his associates most immediately instrumental in the admirable arrangements, and the extensive and costly fixtures prepared for the occasion. Nothing is easier than to express our good wishes before hand and our approbation afterwards, and many may be ready with their pecuniary contributions; but on how few fall all the labour and trouble of personal supervision to see that *all is done, and well done!* Nor is it easy to over-estimate the obligation that is due to those who get them up, when the effects of such exhibitions, not only on the agriculture of the country, but on the industrial pursuits of the city, are properly considered. Such large gatherings of men from all parts of our country, distinguished for their discriminating judgment and pursuit of knowledge—as their very presence here warrants us in presuming—have a tendency to diffuse widely, and at once, not only a knowledge of what is new and excellent in the way of animals and machinery, and agricultural and horticultural productions and improvements, but they diffuse also a knowledge of the trades, institutions, facilities and resources of our city, and impart, may we not hope, favourable impressions of the enterprise and character of our citizens in whatever line of industry employed. What agriculturist can fail to see, in a city absorbing in its bosom this year, the portions which were its suburbs the last, and extending its confines rapidly in all directions—rising now to the neighbourhood of 150,000 souls—a vast body of customers for all the products of his own industry, and whose power to consume is necessarily proportioned to their ability to buy, and whose prosperity must therefore be identified with his own. It is thus that the identity of interests between town and country is made manifest to all, and the feeling of narrow-minded jealousy is forced by these great annual exhibitions to give place to mutual good will. And though in these moral results may be seen the most admirable effects of these exhibitions, in a pecuniary view they are attended with benefits confined not to steamboats and railroads, and venders of agricultural implements, and hotel-keepers only, but extending to all trades and classes.

“It ought not to be omitted, as a proof of the accommodating disposition of the keepers of our numerous hotels, and of the facilities at their command for any emergency, that this sudden accession of company, almost to overflowing in them all, seemed to produce no embarrassment to them, nor give rise to complaint among their guests, either of short commons or long charges.

“The proprietors of steamboats, too, and the directors of the railroads and other public conveyances, met the occasion in a spirit of becoming liberality, making no charges on animals and articles sent for exhibition, and reducing materially the fare on passengers.

“Thousands without distinction of party, and who might otherwise never have had the chance, embraced the opportunity of being presented to and taking sociably by the hand the President of the United States, in whose plain, farmer-like appearance, it was not easy to recognise the intrepid commander at Buena Vista, standing with a handful of brave men, as at the pass of Thermopylæ, against an army of 20,000 warriors, yet calmly and firmly declaring—“My wounded are behind me—I will never pass them alive!”

AGRICULTURAL FAIRS.

THAT of the PHILADELPHIA Society, held on the 5th of October at the Lamb Tavern, has at least the merit of living embers from the first fire kindled in the cause sixty years ago, and out of the best materials, if we may judge from its tenacity of life, sometimes nearly going out, and again blazing up. Who knows but that it may burst forth again with more than its original strength and brilliancy!

A very vexatious accident prevented us from being present at the delivery of the annual address, by the Hon. Joseph R. Ingersoll; but that untoward circumstance served perhaps to increase the pleasure with which we have since perused it. Much of what was to be deemed new and practical was hardly to be expected, in the performance of an orator whose time has been given to law politics and classical research; but do we not owe a lively sense of obligation to the scholars who are easily persuaded to lay aside their scalpels and their briefs, to show us, occasionally, how appropriately the handles of the plough may be garlanded with the flowers of literature?

There is one practical suggestion, which, as it is borrowed from a Lancaster County farmer, must be worthy of attention:—the antidote to the fly in wheat, so sententiously given in the words “burn your stubble.” One difficulty, however, arises, that the egg of the fly is said to be deposited after the wheat sprouts above the ground, and that stubble is not usually followed by wheat, unless in violation of the maxim in farming, that white crops should not succeed each other.

We heartily concur in what follows from his address on the subject of agricultural education. Education, to be useful, should be made as strictly appropriate to the use of the implements and the practice of the art of agriculture as, at West Point, it is with so much efficiency systematized and conducted with express reference to the use of the implements of war. That, in fact, is to be the next and the only hopeful step in the line of general agricultural melioration for our country—appropriate, express preparation and discipline of the mind of the rising generation in the schools of the country, by teaching, not Latin and Greek and Hebrew, and old speeches of old Roman senators and Pagan generals, but the principles of mechanical philosophy, civil engineering, road making and bridge building, geology, agricultural chemistry, and animal and vegetable physiology; in short, very nearly the same education which is now conferred at West Point, and which is paid for by the farmer and planter, who it seems dare not even ask for similar appropriations for instruction for their own sons in the arts of production. It is to this reform in the schools that must now be sown the only seeds that will bear good fruit for agriculture, and that reform will never take place in a state of things under which men are scattering in pursuit of bread, instead of finding bread by the diversification and prosperity of all other pursuits in proximity with the plough and the harrow. When a state of things exists, under the force of which rural population thickens, then will agriculture improve, as other arts are doing. Then shall we have inventions to do for it, what the cotton-gin and the power-loom have done for manufactures; but never while we forbear the use of the natural resources with which God in his bounty has imbedded and filled our country. But on this point we have more fully expressed our views in the discourse pronounced at the instance of the farmers of Bucks County, in the only form that we could hope to justify the honour of being invited to address them on the interests of their pursuits.

EXTRACTS FROM MR. INGERSOLL'S ADDRESS.

On the Progress of Agricultural Improvement.—There is as much difference between the irregular efforts of undisciplined farming, and the due appliance of skill under the guidance of knowledge, as between the wigwam of the savage and the convenient edifice of improved society. Agriculture, as an art, is little known to the children of the forest. In the progress of society, mechanism, in its various shapes, is apt to keep in advance of it. When land becomes valuable with increased population, or adjacent markets furnish new demands for more abundant supplies, additional means are sought for fertility and productiveness, and agriculture takes again a prominent place as an attractive pursuit.*

Agricultural Education.—One of the most enlightened proofs of the advancement of the age—the system of public education, is well adapted to the advancement of agriculture. Primary schools, which are no where better conducted than among ourselves, and especially that High School which is a climax of education for the people, and a nursery for expanding science and philosophy, present opportunities which should be embraced with avidity. Where could the elements of farming be taught with so much propriety? Elements that would be any thing but thrown away upon those who may not pass their lives upon a farm, and would be a treasure to those who are so designed. Knowledge so important and so well calculated for everyday use, so diversified and so practical—is an acquisition desirable for all classes: to some it is invaluable. A professor having this object especially in view, would occupy his chair and dispense his instructions to a purpose as beneficial as any that in the wide range of provisional education has been wisely contemplated. All the natural sciences, call them by what name you will, are hand-maids to agriculture. The only peculiarity it claims is in the application of them. In the particular object and use they would have less immediately to do with the physiology of man, his diseases and desires, and more with the physiology of agents destined for the use of man—the earth and its properties—plants and their tendencies—domestic animals and the means by which they may be rendered most available. So large a part of the population of Pennsylvania is engaged in agriculture—so great a share of her thirty millions of broad acres, after deducting the vast area of mineral wealth and forest, consists of arable, pasture, and meadow ground—that it will be no unreasonable exaction to expect full information from the fountain-head on these vital topics. Husbandry may justly claim a chief share of the care of statesmen in such a region, and that care can be most effectually applied through the agency of an institution, which, owing its condition to the foresight and liberality of statesmen, is entitled to be their pride.

Recommends a valuable School Book.—A valuable little work very lately given to the public by Mr. F. G. Skinner, owes its origin in France to the Professor of Rural Economy and a Director of the Normal Primary School of the Department of Meurthe, both honorary members of the Central Agricultural Society of Nancy. These "Elements of Agriculture," besides their usefulness in conveying information on the subject of which they treat, impart a happy suggestion as to the source and character of the attention paid to the art itself abroad. They are a happy confirmation of the sort of contribution to knowledge in the culture of the soil which is now respectfully and earnestly urged. *Is it not remarkable that no provision whatever is made either in rural or town districts, in primary, secondary, or high schools, sustained as they are entirely by the people of the Commonwealth, and in due proportion by the country people of the Commonwealth, for this object, so essential to the best interests of all?*

The little work here recommended, which may be had for a few cents, was very highly recommended lately in his inaugural address, by the distinguished president of the Norfolk County, Massachusetts, Agricultural Society. It is impossible for any one who reads it not to concur in the opinion that every country school-boy ought to have a copy. A gentleman in Virginia lately wrote for one hundred. Mr. Allston, of South Carolina, at the head of the educational institutions there, was the first to order a number for gratuitous distribution.

* This can only ensue when all the other industrial pursuits for which a country possesses the materials, are judiciously and carefully fostered by a wise policy to protect labour against the miserable and degraded labourers of other countries.

STATE AND COUNTY FAIR AT NEW CASTLE.

AT NEW CASTLE on the 17th, we had the pleasure to attend the united exhibition of the County and of the State. We have only room to say in a few words, that it was a good show of animals, vegetables, and butter—generally good, and some excellent of their kind; but the best of the show, was the *show of men*. Never have we seen a larger proportion of well-dressed, good looking, well behaved, respectable men on any public field. They showed in their very looks, walk, and general appearance, an air of conscious prosperity; a sort of sleek, thriving condition, such as you see cattle put on when they prove by their coat and handling that they are waxing fat. There is no State where improvement is more steadily advancing than in Delaware. They understand a few things, and among others these,—the importance of draining their land, the indispensable necessity for restoring its exhaustion by manure—not omitting *lime* and guano—*maugre* the opinion of the “American Institute” against all these three means of improvement. Further, the Delaware farmer understands, or, if not, he ought to be told that another important point is to extirpate *weeds*, that they may not devour the food intended for his grain and grass, as geese sometimes steal the corn that, in our boyish days, we have often seen poured out in cars on the grass to the riding-horse in ——— county in Maryland. Moreover, the Delaware farmer understands that to get the most out of his land, it must be ploughed deep and put in good tilth—and, after all, these are the great, the cardinal points in good husbandry. We shall have more to say of this fair, as we may make of it a hook or peg on which to hang some reflections that occur to us on all such occasions,—on the aptness of those who manage them, and of farmers generally, to overlook the vastly superior merits of inventors of labour-saving implements and machinery over the breeders and fatteners of fat cattle and hogs.

GOOD COWS.

“THE cows which received the premiums of the Essex County (Mass.) Agricultural Society, last year, gave the following products: The one which took the first premium was six years old—‘of mixed breed;’ from 3d June to 3d July she gave an average of 18 quarts of milk per day, beer measure, which yielded 10 pounds of butter per week. Her feed ‘common pasture only.’ The one which took the second premium gave, from April 28th to September 28th, 2405 quarts of milk. The one which took the third premium was eight years old, a cross of the Durham breed. She gave, from the 27th May to the 25th June, an average of 15½ quarts per day, which yielded a little over 2 pounds of butter per day—weighed after it had been twice thoroughly worked. In 121 days, her milk gave 192 pounds of butter. Her feed was ‘good pasture,’ with 15 quarts of meal during the trial of 30 days. The one which took the fourth premium, was nine years old, and gave, in one year, 8767 pounds of milk—probably about 4383 quarts—or an average of about 12 quarts per day. The one which took the fifth premium, was eight years old, and afforded 15 pounds of butter in a week, in July last. Her feed ‘common pasture,’ and one quart of meal per day. The one which took the sixth premium, gave 2448 quarts of milk from April 25th to September 26th.”

Whatever may have been the *breed* of these cows, we would wager a trifle that they bore the marks or “escutcheons” laid down in Guenon’s *Cow Book*! At the late fair in Baltimore, with that guide, we had no hesitation in predicting the cow that would, and

that did take the first prize. She proved to be an Ayrshire imported by Mr. McHenry, of Hartford county. It is in satisfactory proof that a man in France has lately very nearly doubled the produce of his *cheese dairy* of twenty-five cows in five years, by attending to supply the deficiencies in his herd, as they occurred from time to time, according to these marks in the Cow Book. Mr. McHenry, who has attended to the subject, says he turns out no calf for the dairy but in reference and conformity to the directions there laid down.

SHEEP AND WOOL.

"A Profitable Sheep."—Seymour Aldrich, a farmer in the town of Hopewell, in this county, on the 8th inst., sheared twelve pounds of clean, fine wool from a Paular Merino Buck. The wool had a growth of less than one year, the sheep having been sheared the 25th of June last. Who can beat this?—*Ontario Repository*.

"We think Mr. John D. Patterson, of this village, can beat it, for we saw the fleeces of his pair of imported Merino yearling sheep weighed, and the result was as follows:—

"The buck's fleece weighed $14\frac{1}{2}$ lbs., and the ewe's weighed 10 lbs. 10 oz. of very clean, fine wool.

"Mr. Patterson informs us that the sheep were well covered with soap, and then *thoroughly* washed in a stream of clear running water, and sheared as soon as their wool was dry. Notwithstanding these were remarkably heavy fleeces, they were pronounced by several wool-dealers present to be unusually clean, and almost entirely free from gum or oily matter. We kept some samples from each fleece, which we shall be happy to show to all who are disposed to examine them. These sheep are of enormous size, were bred in France, and are known as the celebrated Taintor sheep, having been imported when lambs, by John A. Taintor, Esq., of Hartford, Connecticut, of whom they were purchased by Mr. Patterson, at a great price."

The Editor of "The Westfield Messenger," Chautauque county, N. Y., has been good enough to send us samples of the above fleeces, which may be seen at the office of "The Plough, the Loom, and the Anvil." We remember to have seen, under the auspices of our friend Mr. Buck, some of Mr. Taintor's importation, soon after their arrival at Hartford. However others may have failed, we are inclined to think that Mr. Taintor has reached the head-springs of the Nile: that is, that in his researches after fine-woolled sheep in Europe, he left none behind superior to what he brought.

The Editor of "The Messenger" seems to overlook the fact that Mr. Patterson's yearling sheep were probably fourteen or fifteen months old, whereas the fleece of Mr. Aldrich's had a growth of "less than one year."

There has been undoubtedly a great increase in the weight of fleeces. We find in that unequalled work by Randall, on Sheep Husbandry in all its branches, that Mr. Lasterie gives the following annual averages per head of the Rambouillet flock—1796, 6 lbs. 9 oz.; 1798, 8 lbs.; 1799, 8 lbs.; 1800, 8 lbs.; 1801, 9 lbs. 1 oz. This, says Mr. Randall, is unwashed wool, and will lose half in washing.

We have just referred to Mr. Randall an inquirer from South Carolina for a ram and six ewes: being assured that if supplied by or through him, all will be "O. K."

Rape Cake.—In the recent number of the "English Agricultural Journal," Mr. Pusey gives the following result of an analysis by Mr. Way:—

		Per Centage of Nitrogen and Fat.	
Linseed cake		4.6	11.9
Rape cake		5.23	11.6

which is to the advantage of the latter. We have seen no analysis of the ashes of the rape seed.

AN ACCOUNT OF TWO EXPERIMENTS WITH GUANO AND OTHER MANURES, IN STOVER PARK, DEVON.

No. 1.—Report of an experiment to test the comparative efficiency of five different kinds of artificial manure in improving pond-mud, the experiment being made on an acre of inferior pasture land in Stover Park, in the years 1847-'48-'49.

The land on which the experiment was conducted is of uniform quality, the soil being a light sandy loam a few inches in depth, incumbent on a stratum of white clay.

The land underwent thorough draining in 1844, prior to which it would not produce a rent of more than 5s. an acre.

No manures were applied to the land in 1848 or 1849.

The object sought to be attained by extending the experiment over a period of three years was to test the *durability* of the different manures.

Manures applied in 1847.	Weight of hay cut in 1847. lbs.	Weight of hay cut in 1848. lbs.	Weight of hay cut in 1849. lbs.	Weight cut per acre in 1847. Seams of 3 cwt.	Weight cut per acre in 1848. Seams of 3 cwt.	Weight cut per acre in 1849. Seams of 3 cwt.
1. Six cubic yards of mud mixed with six cwt. of salt, (cost of manure 14s.) . . .	312	327	613	4 $\frac{3}{4}$	4 $\frac{3}{4}$	9
2. Six cubic yards of mud mixed with 1 $\frac{1}{2}$ hogshead of lime, (cost 13s. 6d.) . . .	353	337	538	5 $\frac{1}{4}$	5	8
3. Six cubic yards of mud mixed with 3 bushels of bone-dust, (cost 14s. 3d.) . . .	511	419	670	7 $\frac{1}{2}$	6 $\frac{1}{4}$	10
4. Three cubic yards of mud mixed with 3 cubic yards of tanyard refuse, (cost 14s.) . . .	524	354	558	7 $\frac{3}{4}$	5 $\frac{1}{4}$	8 $\frac{1}{2}$
5. Six cubic yards of mud mixed with 90 pounds of Peruvian guano, (cost 14s.) . . .	900	550	725	13 $\frac{3}{4}$	8	10 $\frac{3}{4}$

N. B.—The after-grass in 1847 was stocked with sheep, but in 1848 it was left unsummed.

No. 2.—Report of an experiment made with the undermentioned manures on an acre of pasture land in Stover Park, in the year 1849.

The manures, when mixed with a small quantity of fine earth, were applied broadcast on March 29, and during the rainy weather which prevailed at the time.

The land is of a fair average quality, and was formerly used as tillage land, but has been in pasture for many years.

The crops were mowed on 22d June, and the herbage produced by the different manurés was of a superior quality.

Manures applied.	Quantity of manures applied. cwt.	Quantity applied per acre. cwt.	Weight of hay cut. lbs.	Weight cut per acre. Seams of 3 cwt.	Cost of the manures. £ s.	Cost of the manures per acre. £ s.
1. None	.	.	401	4 $\frac{3}{4}$	.	.
2. Superphosphate of lime	2 $\frac{1}{4}$	9	616	7 $\frac{1}{3}$	0 18	3 12
3. Nitrate of soda	1	4	706	8 $\frac{1}{2}$	0 18	3 12
4. Peruvian guano	1 $\frac{1}{2}$	6	1210	14 $\frac{1}{8}$	0 18	3 12

E. S. BEARNE.

VIRGINIA.

"*Lead in Albemarle.*—We yesterday saw a very rich specimen of lead found on the lands of Mr. Wm. Faber, about half a mile from the Nelson line and nine miles from the canal. There are two veins discovered—one of them about four feet thick and very rich in metal. Mr. F. is now exploring the mine, which promises to be rich and abundant. The lead was discovered about twelve months since—and is about one mile from Thurmond's rich gold mine, recently brought into notice. The specimen of lead before us is pronounced by Professor Rogers to contain eighty per cent. of lead and four per cent. of silver."

There is no portion of the Southern States that is not rich in mineral wealth, but that it shall become available population is necessary. Virginia has iron ore in abundance, and lead ore in abundance, and gold and silver ore in abundance, and she abounds in the fuel requisite to convert these ores into the form to fit them for the use of man, yet her people are flying from her exhausted lands, to seek in the West new lands to be again exhausted, instead of concentrating themselves upon the rich soils at home. Of all portions of this Union, there is not one that possesses advantages exceeding those of that State, and yet it relatively declines daily in wealth and influence, as every Virginian knows. Let her but determine to adopt the policy that tends to enable the plough, the loom, and the anvil to come together, furnishing employment for the tens, if not hundreds of thousands of people, men and women, boys and girls, now unemployed, and she will speedily regain that position to which her beautiful situation and the immense extent of her mineral wealth so eminently entitle her—and as speedily lose that unenviable position which she occupies—that of furnishing more office-hunters than any other State of the Union. When the plough, the loom, and the anvil come together, labour becomes profitable, and private employments become preferable to public ones. Virginia furnishes, we believe, thrice as many office-seekers as all New England.

ON THE PRINCIPLES TO BE OBSERVED IN THE ERECTION AND CONSTRUCTION OF FARM-HOUSES.

THE OUTHOUSES OF A FARM are those buildings in which the farmer stores and prepares his crops, rears and feeds his live stock, and houses his working cattle and implements. On their arrangement in regard to each other, as well as on the adaptation of each to its separate purpose, much of the farmer's profit necessarily depends. It is to the first of these considerations, the disposition of the several parts in relation to each other, that we shall now direct our attention.

The leading object to be aimed at in the arrangement of the outhouses of a farm is economy of time and labour in the performance of those operations which are to take place within them. The first principle by which we must be guided in an endeavour to effect this object is, the self-evident one, that there must be an immediate connection between those buildings in a homestead whose usefulness depends upon each other. In carrying out this principle, we shall find that the position of the barn governs, in a great degree, that of the other buildings; for the straw-barn being the great storehouse of forage and litter, from which the stables, feeding-houses and sheds and yards receive

their supply, it is necessary that these be situated as near to it as possible, and those nearest to which the greatest and most frequent supplies have to be conveyed. Again, the straw-house is an appendage to the barn where the corn is threshed—there is a necessary connection here also. To the corn-barn, also, must be attached the building which contains the motive power to drive its machinery; and it is a convenient arrangement to have the granary, too, in immediate connection with the corn and dressing-barns. Farther, the house where food is consumed should be in connection with, or at least not far removed from, the house in which it is prepared, and this again should be contiguous to the places where the food is stored. Lastly, that the cleaning out of the houses may not consume unnecessary time, the place where the manure is deposited should be near to them, and of ready access.

It should always be borne in mind that it is more important to save time in comparatively insignificant operations, of frequent occurrence, than in large matters which are not often repeated. Thus, if the separation must be made, it is better to let the house be where

food is prepared, and whence small quantities are taken several times each day, close to the place where food is consumed, than to have it near the storehouse, from which the supply requires to be carried only once.

The second principle of arrangement which should guide us, although subordinate, is yet of great importance; it is to classify and arrange together the buildings used for like purposes.—An attention to this greatly facilitates the labors of the homestead. Thus, the houses and yards for particular descriptions of stock should be placed together; the working cattle should be kept by themselves; the cows of the domestic dairy should be kept apart from the feeding-stock; the pigs and the poultry should have their proper locality. It is of great assistance to this classified arrangement to have a working-court or yard, round which are assembled, in their proper places, the apartments for storing and preparing food, the sheds where the wheel-carriages of the farm are stored, the houses where the tools and smaller implements are kept, those in which the blacksmith and the carpenter work, and the others used occasionally for various purposes. And, in addition to this, it is important to place the highest buildings so as to afford shelter from the prevailing winds, and yet not to intercept the rays of the sun from the other buildings and the yards. In many situations it is desirable that the whole of the out-houses should be so arranged as to have one common entrance, which can be closed for security every night. This is especially necessary near towns.

It may be proper to remark that all the roads should be wide enough to allow a cart and horse to be turned on them; and that it is well that the yards should be so arranged as to allow of a cart being driven through them, which is much better than backing the horse.

So far, then, for the principles of arrangement of the buildings relative to each other. The next topic which demands our attention is the form which the collected buildings should assume, and this involves the consideration of aspect.

Under the idea of compactness, out-houses used generally to be arranged in the form of a square, with a central yard into which the litter was thrown; and here, unchecked by a ray of sunshine, wading in a pool of rain-water from the roofs of the buildings, and of liquid manure from the houses, the farming stock was suffered to languish. Professor Low, of Edinburgh, first showed the absurdity of this system, and pointed out the advantages to be derived by the stock from the admission of sunshine and air to their yards. He showed that these benefits could be best obtained by the form which also ensured other advantages—a long parallelogram. The Professor's principles of arrangement have been extensively adopted in modern homesteads, and have been advocated in almost every publication on Agricultural matters, although very seldom with the acknowledgment of the source whence they were derived.

The best form that the farm out-houses can assume—that which combines the greatest advantages—is a long parallelogram, with its diagonal nearly on a line from North to South. The prevailing and severest winds being from the West and West by North, the greatest possible amount of sunshine, and the best shelter may be obtained by having the sheds for the cattle and their yards open to the South and

East. There are cases, however, in which this rule will not obtain, and these must be dealt with according to circumstances.

The buildings should be placed, if possible, on a gentle rising surface. If, where water-power exists, such a situation can be found, it is well to take advantage of it. But if to secure such power it is necessary to place the buildings where light, warmth, ventilation and drainage cannot be obtained in perfection, then the water-power ought to be sacrificed to these more important benefits. The position of the homestead is often determined by existing roads and divisions of the farm, irrespective of the eligibility of the situation in itself. This is an absurd practice, and cannot be too severely reprehended.

Among other matters demanding our attention in this preliminary notice, are the means for preserving the liquid manure made in the steading. The attainment of this important point is greatly assisted by the classification of the buildings before spoken of. Underground drains should be carried from the cow-houses, feeding-houses, and pig-sties, to one or more tanks. The tanks may be of two kinds; they may be adapted for making compost, in which case they should be in the form of a rectangular basin sloping inwards from the ends to its deepest point in the centre of its length, so that a cart may be driven through when the compost is carried out; and this, or something similar to it, is probably the most economical mode of using the liquid manure on a farm. Or the tanks may be in the form of a well, square, rectangular, or circular in the horizontal section, and arched or domed over. In this case the tank is used to contain the manure in its liquid state, and should, by puddling and the use of cement, be made perfectly water-tight. It must have a man-hole in the arch or dome, and another opening by which a pump may be inserted, or in which it may be permanently fixed. The drains, before entering this latter kind of tank, should terminate in a cesspool in which the liquid manure may deposit any sedimentary matter which would obstruct the working of the pump if deposited in the tank.

The eaves of all the buildings should be furnished with gutters, and the rain-water collected by them conveyed to underground drains by cast-iron pipes. The drainage of the site has already been spoken of as an essential requisite. It should be thoroughly done. In too many instances remedies are applied to the foundations of buildings, to prevent dampness from ascending, while the only true remedy is, by draining thoroughly, to remove the cause.—As drains very often harbor vermin, cesspools should be constructed in them, at proper places, without the buildings, which will effectually bar their progress.

On reviewing the principles here recommended to be observed in the collocation of the out-houses of a farm, it will be seen that their application in practice must be attended with no little difficulty. Slight variations in management, to suit the soil, and other peculiarities of the farm; the nature of the power to be employed in threshing, &c.; the requisite arrangements for shelter in exposed situations, when such situations cannot be avoided; and the nature of the ground on the site of the buildings, all tend to embarrass and prevent the application, in any single case, of all these principles in their integrity. The judicious designer knows

in such cases what to forego, and and what to secure; and endeavors, when a sacrifice has to be made, so to arrange, that all the more important principles may be observed and carried out.

Before concluding these remarks, it may not be amiss, in a sentence or two, to consider the *appearance* of out-houses, arranged on the principles here advocated. Premising, then, that we consider any attempt to mask or disguise the character of a building, as indicative of what, in ordinary language, is called bad taste; and that the expression of character and fitness, on the contrary, is in correct taste, we shall find

that this expression of character and fitness in these buildings, can easily be obtained; in many cases the whole steading can be arranged symmetrically; and where this is not attainable, the extended lines of building, the archways, the varying outline caused by the different heights of the houses, and the numerous gables, harmonizing with that of the stacks in the barn-yard, never fail to give piquancy and picturesqueness. There ought to be no mock windows, mock doors, or arches; no false gables; let every thing be real, and expressive of its use; and trust to that expression, as the best æsthetic principle of design in such erections.

ON AN IMPROVEMENT IN THE MODE OF ATTACHING HORSES TO WAGONS.

BY J. H. GRIEVE.

HAVING observed amongst the topics proposed by the Society as subjects for prize essays, that of the use of one-horse carts, I thought it might be agreeable to you to receive some remarks relative to different modes of traction which have been suggested to me by actual observation, and which, so far as my knowledge extends, have as yet passed almost without notice.

There is no mechanical reason why a single-horse cart should possess any advantage over a four-wheeled wagon; and if that opinion has gained ground in this country, it is wholly to be attributed to the defective manner of application of horse-power.

In one-horse carts, a part of the load weighs upon the saddle placed behind the shoulders of the horse; and, as the principal fulcrum upon which he acts is concentrated in his hind-feet, it may, at first sight, appear that the load upon the back would assist in the effort of traction, and I have no doubt that it does so to a certain degree; but this small advantage is only gained at the expense of the muscular power of the animal, and has a natural tendency to exhaust and fatigue him.

If the use of wagons has hitherto proved unsatisfactory, the cause is merely that no sufficient care has been taken to ensure the *simultaneous* effort of the horses, so that a great part of their power becomes inefficient.

Nothing, indeed, can be more opposed to reason and good sense than the manner of yoking several horses in tandem that is usually practised both for carts and wagons, particularly in the south of England.

In the first place the shafts are often too much elevated, and then the shaft-horse is borne to the ground by the efforts of those that precede him, or he is made to swerve from side to side by the alternate jolting of the wheels, or by the leaders varying from the straight line of traction.

In the case of four-wheeled wagons, with horses yoked abreast, the traces of each horse are always fixed to the splinter-bar; it is more than difficult for the driver to ascertain if all his

horses are exerting their strength together, and it is almost impossible for him, even with the utmost care, to force them to do so.

A much better method of yoking has been applied for ages past to the plow, viz. that of the swing-bar; but, strange to say, this system has not been adopted for carriages, with the exception of the leaders of stage-coaches; and this only proves that convenience, or, we may say, necessity, has been the primary cause of its being adopted at all, and not any sense of the superior mechanical arrangement of the system.

A little reflection will, however, show that this arrangement is better adapted than any other to produce simultaneous action—each horse being so placed respectively to his neighbor as to operate on a balance-beam; and it is self-evident that neither can draw unless the other acts as a counterpoise: the result is that the full and united force of the team is obtained for the purposes of traction.

For centuries past this system has been successfully applied in Belgium to the yoking of horses to four-wheeled wagons; and I could cite various instances of great loads conveyed in that manner, but will only mention a single instance of a load of goods which I myself saw weighed, and which was brought from Antwerp to the neighborhood of Mons, a distance of about 72 miles. The wagon was a very heavy one, with the wheel-tires 8 inches in breadth, and was drawn by five horses, and the load weighed fully 14 tons. Now when we take into consideration that several considerable acclivities had to be surmounted, at only two of which spare horses had been used, this example alone is sufficient to demonstrate the evident superiority of this system of traction. Doubtless the paved roads offer less friction than our usual macadamized ones, but this advantage will not account for the marked superiority of this load, which amounts, including the weight of the wagon, to about 3½ tons per horse.

I may observe that in Belgium the load is strictly limited, by law, in proportion to the breadth of the tires, and that a greater load than

that above cited could not be conveyed during fresh weather; but instances have occurred of much heavier weights being drawn by the same number of horses, during hard frosts, when no injury can be done to the roads.

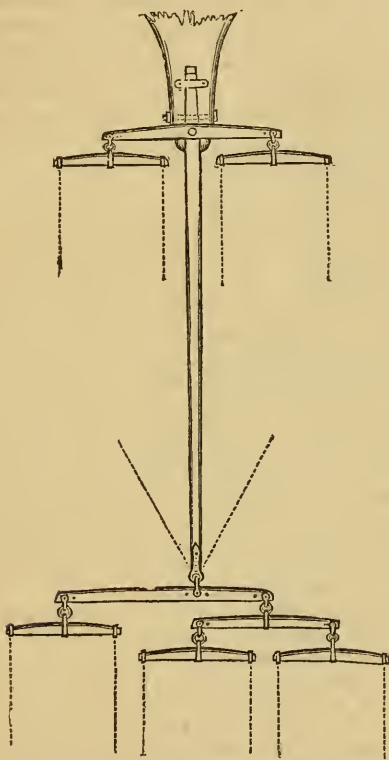
The horses usually employed on the road are of the old Flanders breed, the same as the common dray-horse in London, but evidently inferior to them in strength and weight.

Wagons of the same nature, but of a lighter construction, are also generally employed for farm purposes, and are found convenient and effective.

The Belgian Government have applied the

same principle to the yoking of the artillery-trains; and it is certain that no guns of the same weight, and drawn by the same number of horses, would otherwise be able to traverse rough and uneven ground with the same facility.

It may be remarked that provision is made to adjust the leverage to the power of each horse, so that the pairs may be always equally matched, if not in strength, at least in their effective efforts. To explain this more clearly, I have subjoined a diagram representing the fore-train of a wagon adapted for five horses. It will be observed that spare holes are provided in the swing-bars to change the leverage.



N. B. It is curious, but nevertheless the case, that the whole team of five horses is guided by
3 King's Road, May 12, 1845.

a single small line tied to the middle of the bridle-reins of the off-hand leader.

[*Jour. of Royal Ag. Soc. of England.*]

GRAFTING.—It is often, in grafting upon slender stocks and branches, very inconvenient to attach and support a great lump of clay, which, in spite of the greatest care and attention, will, either in very wet or very dry weather, crack and fall away. Last Spring I made trial of sheet India-rubber, cut into narrow strips or bandages, from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch broad, which I applied to the graft—having first fixed the graft with bast—and with success. The India-rubber presents all the requisites sought for in

clay; it is air-tight, and water-tight, and, moreover, it will not fall away; and it is elastic, which admits of the swelling of the scion in its growth, and it is applied with perfect ease and quickness. After wrapping the bandage round the graft and stock, as you would a linen bandage on a cut finger, the last turn only requires securing by tying with a bit of thread or thin bass; and it has a very light and neat appearance, when the operation is completed.

G. L.

ON FATTENING CATTLE, AND THE FORMATION OF FARMERS' CLUBS.

CAN we too often urge the formation, in every Election District of the country, of *Farmers' Clubs*, for the discussion of questions of all sorts, even political questions, *immediately and obviously connected with the spread of agricultural knowledge*, and the advancement of agricultural prosperity? How easy it has ever been found when the political huckster has desired to get up an excitement, most generally with some sinister design covered by the avowal of a public purpose, to bring his clansmen around him, at some X roads tavern, to be slang-whanged. For *this* purpose, he has but to sound his whistle; alas, not the spirit-stirring whistle of *Rhoderick Dhu*—at sound of which

"The rushes and the willow wand
Are bristling into ax and brand,
And every tuft of brand gives life
To plaided warrior, arm'd for strife."

No! no! his resembles rather the insidious call of the shepherd, whose flock, gathering around him in hope of being fed, are flattered into the fold and sheared, and then turned loose again until another crop of wool has time to grow and be sheared again. Thus are good, easy Farmers gathered under the banner of party to appoint their *patriot leader* to the Legislature or to Congress, or to recommend him to some Executive office, and all this in abject compliance with the "*usages of the party*."

We are characterizing no particular faction, but, more in sorrow than in anger, adverting to the easy excitability of the agricultural community, in matters of party politics, and the great difficulty of bringing them together for any *peculiar concern of their own*, as *Farmers*, and the extreme reluctance and parsimony with which they can bring themselves to give either time or money for the discussion of agricultural questions, the dissemination of agricultural knowledge, and for devising the ways and means of controlling and shaping the legislation of the State and the Country, for the protection and benefit of the *landed interest*. We have known farmers and planters who would cheerfully give a fat sheep or bullock, or a barrel of whisky or of flour, for a *partisan "treat,"* who would not give \$5 a year for 1200 pages of the most valuable information to be gathered in reference to their own business, from the experience and teachings of the best farmers, and the ablest men to be found, in all parts of the world! And yet there are men who will tell

you that they wish their sons to be honorably distinguished for intelligence, and to keep pace, themselves, with the progress, experience and discovery, in every thing connected with their own business and sphere in life!

We know not how we could give a better idea of the utility of these Farmers' Clubs, and of the useful designs which animate and so well become them; than by copying, from the last November number of the London *Monthly Magazine*, the following account of a meeting of the "LOUGHBOROUGH AGRICULTURAL ASSOCIATION." The problem for discussion was *The Fattening of Cattle*. We transfer to our columns the observations of the several speakers, the more readily, as they seem to answer, in part at least, an inquiry lately made of us by MAJOR GWINN, the enterprising contractor for the completion of the Chesapeake and Ohio Canal, who has large possessions in the fine "glades" of Allegany County, Maryland; a region so admirably adapted to the growth of *oats and potatoes*, and replete with advantages for grazing and for sheep and dairy husbandry more eminent and less known than almost any equally eligible portion of our country. Major Gwinn's inquiries were, as to the adaptation of the crops congenial to that elevated region, to the *Fattening of Cattle and Sheep*.

True, it may be said, and by some objected, that these are *English* discussions; but the substances referred to, and the principles evolved, are of no particular nation or clime; they are of universal use and application, and in Heaven's name let us go, for knowledge, to Kamschatka or the moon, if not elsewhere to be had.

It requires but half a dozen in any county or neighborhood to form the nucleus of such a club. If the right spirit exists, it will soon be sufficiently numerous, and if it does not exist, it may be easily infused.

One thing is to be guarded against—the *cacothes loquendi*. Too great a disposition to twaddle and to have the last word! When questions are given out, the chairman should allow no rambling from the subject in hand. One thing at a time—and for the sake of uniformity and consistency in the manner of conducting these meetings, it would be better to have a standing permanent chairman, chosen with strict reference to *his tact for the duty*,—quali-

fied by a happy union of courtesy and firmness, to maintain order, and bring back rambling debaters to the order of the day. There is nothing useful gained by picking up, at random, this gentleman or that, strangers, who happen to come in, and making them chairmen, merely for the sake of making a hit, or a sensation in the papers. But to return.

One fact alone, repeatedly stated, and universally acquiesced in, at this Loughborough meeting, would repay the time taken up in the perusal of its proceedings, if, happily, it should prompt the reading farmer, to act upon the testimony we there find, again, in favor of *protecting domestic animals from too much exposure to cold*. It is broadly asserted that the warmer they are kept, the less food they require to keep them in a certain condition. It is there shown, also, that food for fattening animals, goes farther when given of a temperature near the natural temperature of their own bodies, which is nearly 100 degrees. Here, too, we see it stated as an established fact that the *exclusion of light* favors the fattening process. All these things are essential, not only as matters of information with which every accomplished farmer should be acquainted, but as matters of practical economy in the management of his estate.—We will suppose too, for example, to carry this matter a little farther, that a gentleman farmer near Washington, is dining, we will say, with the President or the Mayor of the City, in company with his Excellency the Minister from Holland, whom we happen to know to be of enlightened, inquisitive mind, as all Ministers should be, and the question were to come up about *cheese*—(which it must be allowed would be a very natural one about the time the Port makes its appearance,) though this gentleman farmer might not choose to boast over the Dutch Minister, that ours had driven *his country cheese* out of the English Market; yet the fact that it has done so being admitted, would it not be legitimate that the American farmer, proud of his calling, should take pride in the fact being so, and in being able to answer the question *why?* which is disclosed in this *English* discussion! Are not the substance of these proceedings, and the prize essay we have before published on the manufacture of Cheshire cheese, among the sorts of knowledge that every farmer, anxious for the intellectual culture of his son, would like him to possess—even as much, if not more, than to possess it himself? He that would not, cannot have the heart of a man, much less of a *parent*. Yet how is knowledge—that sort of knowledge which should not only be a part, but is fitted to be the most delightful part of rural life—to be obtained but by *inquiry*, by *reading*, and by association with companions and men, more informed than ourselves—a

thing which every young man should study to do?

It is to beget and to satisfy this thirst for knowledge, and for that true glory which knowledge and virtue only can confer, that we are devoting all our poor abilities to the "FARMERS' LIBRARY AND MONTHLY JOURNAL OF AGRICULTURE;" and as we hope for success, we would so devote, if we could afford it, a portion of all of life that remains, without any remuneration but the pleasurable consciousness of having contributed something toward the moral and intellectual improvement of a pursuit, which in more senses than one has always *supported*, for it has always been *ridden* by, every other.

Loughborough Agricultural Association.

THE quarterly meeting of this Association was held in the Wellington room, at the Plow Inn, on Thursday, the 25th September. S. B. Wilde, Esq. presided; and Mr. J. N. H. Burrows occupied the vice-chair. After the cloth had been drawn, and the usual loyal toasts were given, as also the health of the President, Chas. Wm. Packe, Esq. M. P.—

The CHAIRMAN read the circular calling the meeting, in which it was announced that the subject of discussion was, "the fattening of cattle."

Mr. RAWSON, surgeon, of Kegworth, introduced the subject. He said, there were known to chemists about fifty-six elements, of which there were only eight or nine in animals; the principal of these were oxygen, hydrogen, nitrogen, and carbon. Oxygen enters into all animal and vegetable substances, and is an essential ingredient in atmospheric air. Nitrogen has no positive properties; its object is to dilute oxygen. No animal could live in nitrogen alone. Hydrogen is sixteen times lighter than common air, and is an essential ingredient in water, and very inflammable. After an elaborate description of the various elements which enter into the animal frame, the speaker proceeded to inform the meeting what were the various uses of each. Nitrogen, he said, was the principal ingredient in flesh and muscle. Fat is composed of carbon and hydrogen. If they wished to make an animal fat for sale, or for show, they must feed it on carbonaceous food. Unripe straw is very carbonaceous. As the seed ripens it becomes less so, and not so suitable for fattening. Cows generally feed well on aftermath. Half a pound of Swede turnips contains 110 grains of nutriment, while the same weight of white turnips only contains 85 grains. The outer temperature is very important; it should be brought as nearly as possible to the temperature of the blood. The same regard to temperature is necessary with respect to a milking cow. Fat is a mere deposit, a secretion; it does not impart strength, rather the contrary. Hence we do not make a horse fat for racing, but make him display muscular power. In fattening horses for sale, carbonaceous food, young grass, oil-cake, Swede turnips, &c. should be given. In feeding for use, the carbonaceous should be mixed with an equal quantity of other kind of food.

The CHAIRMAN next proposed "The health of Mr. Bernays," which was received with applause.

Mr. A. J. BERNAYS (analytical chemist, from

Derby), then rose and said: Agriculture is a subject of such vital importance to the community at large, that I consider myself bound to attend all such meetings, where I may increase my knowledge of it; and I shall always be glad to be present at your quarterly meetings as long as I am in the neighborhood of Loughborough. We have just now heard that although 56 elements are at present known, yet only a small portion of them enter into the composition of animal and vegetable life. Of this portion, consisting of from 10 to 12, only four enter extensively into the formation of the organized portion of the vegetable and the animal. These elements arrange themselves into two distinct classes: the one class, formed by the combination of carbon, hydrogen and oxygen, in different proportions, includes what Liebig calls *the elements of respiration*. Hereto belong starch, fat, butter, sugar, gum, and alcoholic fluids. These may likewise be termed non-nitrogenized substances. The other class, formed by the combination of all the four elements, includes *the elements of nutrition*, or the *nitrogenized* constituents of food. Hereto belong vegetable and animal fibrine, caseine, albumen, and gluten. The non-nitrogenized constituents were provided for sustaining the animal heat of the body, and protecting its parts; and in so doing a provision is laid by, upon which Nature draws when the body is diseased. From their very nature they are easily destroyed by the influence of the oxygen of the air. You all know it to be a common practice to milk cows in the field, if they be at any distance from the homestead; the reason is obvious: when a cow walks a great distance without food, the oxygen of the air almost immediately begins to act upon those substances with which it can most easily combine. Such a substance is the butter in the milk: when a cow is driven home, the butter is found, in great part, to have disappeared. Again, after parturition, the milk of the cow contains only traces of butter; because, by the increased action of the muscles, a larger proportion of oxygen is taken into the system. This well known fact brings us to the subject of stall-feeding. When a cow is intended for milking, and with a view of yielding as much butter as possible, we naturally confine her. In this unnatural state, there being no call for exercise, the food taken by the animal is only in small part expended in maintaining its heat. However, we all know that confined milch cows never yielded so well-flavored butter or cheese as those which are unconfined. Cows living in a natural state eat what they like: stall-fed cows eat what they get. *Owing to this cause, the Dutch cheeses have nearly been driven out of our market by the American.* In Holland, stall-feeding is the common practice; hence is the produce less palatable than the American, in which country, land being cheaper, the practice is unnecessary. There can be no question about the utility of stall-feeding, but I very much question whether close confinement is equally beneficial with a confinement allowing of some gentle exercise. When the weather is warm, cattle may pasture in the meadows without loss to the agriculturist. *The air is then nearer the temperature of their own bodies, besides being more expanded.* The animals feel no call for exertion to keep themselves warm, and the gentle motion necessary in the seeking of food, by increasing the healthy state of the body, enables them not only to eat more, but to

assimilate better what they do eat. In winter the case is materially altered. The temperature is far lower than that of their own bodies; the air, too, being more condensed, contains a proportionally larger quantity of oxygen. Therefore, more non-nitrogenized food will be required to combine with the excess of oxygen; indeed, as we all well know, more food will be required than in warm weather. Here the peculiar advantages of stall-feeding come to our aid. *You will perceive that warmth produces a saving in food; it is indeed an equivalent for food.* Every thing that cools the body of an animal, causes a proportionate expenditure of food. In stall feeding, the temperature of the air of the stalls should be equally maintained, and they should be kept clean. The animals should be regularly fed, have plentiful litter, and be kept clean. If, as we have already said, warmth is an equivalent for food, it is obvious that the form in which the food is given cannot be immaterial. The more we facilitate the adaptation of the food for the organs of digestion, the greater will be the saving to us. The farmer cuts up his hay, straw and turnips to save some expenditure of force, hence of food, by the feeding animal. If the food contain much water of a temperature far lower than that of the animal, it must be raised to that temperature at the expense of a part of the food. This is obviated by the process of steaming. An ox, fed by Earl Spencer, consumed in a winter month (the temperature of the air 32°), 60 lbs. of mangel-wurzel a day. Now, in order to raise the temperature of the water of the mangel-wurzel to the temperature of the body of the ox, no less than one-twentieth of the food was expended. All feeders of pigs know that they thrive better on dry than on wet fodder. (Mr. B. sat down amidst great applause).

The CHAIRMAN then proposed "The healths of Mr. Stokes and of Mr. Allen," who made a few observations on the advantages of giving artificial food to animals in the straw yard. He had himself given oil-cake to cattle, and found it to remunerate him.

C. STOKES, Esq. rose to give his testimony to the principles laid down by Mr. Rawson and Mr. Bernays. He could fully bear out Mr. B.'s remarks on stall-feeding.

Mr. SMITH wanted to see science brought forward in connection with Agriculture. "We want," he said "something definite and distinct on the formation of fat and muscle." He wanted defined what would produce most fat, milk, and cheese; and he hoped to provoke one of the gentlemen present to rise and define it. He hoped they would give them the kind and quantity of food to produce them.

Mr. C. W. WOOD, surgeon, of Woodhouse Eaves, said he would direct the few remarks he had to make exclusively to the expressed object of the meeting, namely, the feeding of cattle; and he viewed that as the most important matter with which the practical farmer had to do; in short, his whole life and exertions tended only to produce the greatest possible quantity of beef and mutton—if not in the shape of fat cattle, his supply of grain only produced the same effects in man. But before we talk of producing, it is necessary to ascertain correctly what it is we want to produce. All animals are composed of bone, muscle, fat, cellular tissue, wool, hair, horns, skin, and nails, and we find these very substances ready formed in vegetables, the power of nutrition in the animal having

nothing to do but select them from its food, and by means of the circulation to place them where they are wanted. If your object be, as in the young growing animal, to increase as well as to sustain it, you choose those vegetables which contain a large proportion of muscular fibre, or nitrogen and phosphate of lime for the bones, such as peas, beans, oats, barley, &c. If, with a full grown animal, your object be to sustain its condition with an increase of fat, you give those vegetables which contain fat ready formed, as lentils, Indian corn, oil-cake, &c. But as you have generally a mixed object in view, namely, to produce bone, muscle, and fat also, you must necessarily give a mixed food—the operations of which I will now explain. The composition of the animal and the vegetable world is identically the same, and the latter, wherever we find it, contains in a greater or less degree all the elements of the former. The vegetable world is sustained entirely from inorganic nature, the earth on which we tread, and the atmosphere we breathe, occupying a middle sphere, its whole existence being to collect materials to build up the animal, consequently entirely subservient to it. The inorganic world, again, is composed of a few simple elements, of which hydrogen, oxygen, nitrogen, carbon, phosphorus, sulphur, and some saline substances, as potassium, sodium and calcine, form the chief, the very elements of vegetable and animal life. Geology, chemistry, physiology, are therefore essential to the right understanding of this subject, bearing ever in mind that the lower are always administering to the wants and necessities of the higher orders of creation. There is no motion in an animal body, or emotion of mind, but what causes a corresponding absorption of the tissues of the body, and in order to keep up this daily waste, a certain amount of food is necessary. This is called sustaining the body. Thus cattle working hard require a larger amount of food than when at rest. This necessity being duly attended to, constitutes health. But fattening, gentlemen, is an unnatural condition, and requires an increase of substance. Hence the necessity of unnatural means, as the absence of exercise, light, and the influences of the atmosphere, a mixed diet (to bring out all the materials of the animal body to the greatest perfection) in a dry, warm state. *Mr. Childer's beautiful experiments proved that warmth alone with an animal would produce one-third more flesh, and at the expense of one-fourth less food. Mr. Norton also proved that the absence of light with warmth produced still greater results.* The reason of this is obvious. Every animal possesses both a nutritive and respiratory apparatus; the one to sustain the body, the other to support its vitality, by producing heat or warmth. This first object is effected by the gluten in the food principally, the basis of which is nitrogen. The second by the starch, sugar, and gum, contained in the food, which form bile, the basis of which is carbon. The bile passes into the intestines, where it meets with oxygen, and thus becomes carbonic acid. In this state it enters the circulation, where it meets with peroxide of iron (which the blood always contains), the carbon unites with the iron, and forms carbonate of iron. In this state it passes to the lungs, where it meets with fresh oxygen during inspiration, which re-converts the carbon in the carbonic acid, which passes off during expiration, while the peroxide of iron is reformed, and taken back by means of its carriers to be again

transformed into carbonate. The result of this combustion of carbon is heat. The heat of the animal body is nearly 100 degrees: all food, therefore, before it can be assimilated must be raised to its own temperature, which can only be done by the consumption of carbon, or in other words, food. Potatoes, linseed-cake, and oleaginous seeds, on account of the starch, sugar, oil, and gum they contain, are well adapted to accomplish this end. If we reflect for one moment on the immense importance of the liver and lungs in the animal economy, is it not strange to see the score of diseased ones which our shambles are constantly exhibiting? showing the great inattention the farmer pays to the comfort and well-being of his cattle. Fat is a reservoir of carbon for the system to draw upon for the purposes of combustion, in the event of the food not containing a sufficient quantity of the proper elements to keep up animal heat. As manure is an important result attending the feeding of animals, it may be well to remark that its quantity depends upon the refuse of food, and the amount of absorption going on in an animal's body, or in other words upon its own destruction, thus returning to inorganic nature, as food for vegetable life, the elements of its own nature. But the quality depends upon the quantity of nutritious food given to the animal. The young, growing animal requiring increase as well as sustenance, consumes all the nitrogen and fatty matter in its food. The milking cow the same. But in the full-grown, feeding animal a large quantity of these ingredients is not consumed: a rich and valuable manure is the result. In choosing animals for feeding purposes, the farmer often exhibits a remarkable knowledge of physiognomy. He likes a kindly-disposed, quiet-looking animal, with symmetry of carcass; one built for strength, broad across the back and loins, and long quarters, where large masses of muscles are placed, a narrow and deep chest, and "a good handler," or where there is a large quantity of fine, soft hair, with plenty of fatty matter underneath to nourish it. Thus furnished, he has only to put into operation the suggestions of science, and the result must necessarily be both profitable and useful. When we see the extensive application of capital, industry, and science to the manufactures of this country, and the comfort and wealth they produce to thousands of our fellow-creatures, also the dominant influence of its interests, threatening the downfall of the British farmer, surely it is time, and our bounden duty, to unite these same principles, that the abundance of the soil may satisfy both landlord and tenant, and be the means, under the blessing of Divine Providence, of producing plenty of cheap food to the many thousands of our wanting fellow-creatures.

The CHAIRMAN proposed the health of Messrs. Smith and Wood.

Mr. SMITH replied, and expressed his gratitude to Mr. Wood for his elaborate exposition of the subject, and still hoped to see science and practice combined much more than he had done.

Mr. Wood proposed the health of the Chairman, which was received with loud cheers.

The CHAIRMAN rose and expressed his gratitude for the kindly manner in which they had drank his health. He would have gone farther into the subject before them had it not been so ably treated by gentlemen of practical science. It was from practical men they must expect

useful information; and when they had practical men for their leaders, it was their own fault if they did not benefit by them. He bore testimony to some of the principles laid down by the previous speakers, and said he should feel pleasure in presiding at their meetings. Again thanking them for the honor they had done him, he resumed his seat amidst applause.

Mr. BERNAYS again rose, and said—In order to obtain a fair proportion of fat and lean, it is of the utmost importance that you should be acquainted with the composition of food. We should be very much mistaken were we to judge of the value of food by its *bulk*. Greentop turnips, mangel-wurzel, and red beet, contain 89 per cent. of water; Swedes, 85 per cent.; potatoes, 72 per cent.; oats and wheat straw, 18 per cent.; hay, peas, and lentils, 16 per cent.; and beans only 14 per cent. Hence the latter food is infinitely superior, as to its feeding properties, to the former. But we have only spoken of the food in relation to water: it is necessary that we should understand each other when we make use of certain terms. It is but too indefinite if we include fleshening and fattening in the term *fattening*: the term *rearing* would then be more appropriate. But it would be still better if we distinguish between *fleshening*, or the formation of muscle, and *fattening*, or the formation of fat. According to the quantity of non-nitrogenized constituents of food capable of forming fat, in other words, according to the supposed fattening properties of food, they rank thus:—1. Oats, barley meal, and hay; 2. Beans and peas; 3. Lentils; 4. Potatoes; 5. Turnips and red beet. According to their fleshening properties, they stand thus:—1. Lentils; 2. Beans; 3. Peas; 4. Flesh; 5. Barley meal; 6. Oats; 7. Hay; 8. Carrots and potatoes; 9. Red beet; 10. Turnips; 100 lbs. of lentils are supposed to be capable of yielding 33 times as much muscle as 100 lbs. of turnips. Great advantage, therefore, results from the admixture of food. An animal which has been fed chiefly on oil-cake, would, on being turned out, increase in size much more slowly than the animal which has been fed on hay, or on turnips and hay. The oil-cake produces chiefly fat, and little flesh; hence the movement of the animal will consume much of the ready formed fat, or tallow. It is only when the oil-cake is given with fleshening food—such as beans, oats, and hay—that lean is proportionally formed. Warmth, confinement, and fattening food are most favorable for the formation of butter, fat, and tallow. Herbage—which is generally denominated *poor*, but which, in reality, is *rich* in nitrogenized constituents, and which cows have to crop themselves—is favorable to the formation of cheese, but not of butter.

Mr. STOKES—Would you recommend the food to be given in a warm state?

Mr. BERNAYS—Decidedly; a little lower than the temperature of their own bodies.

Mr. STOKES proposed "The health of Mr. Burrows, and the Stewards."

Mr. B. returned thanks, and said he had been much pleased with the discussion that afternoon. He was sorry that more practical men had not risen to take part in it. He had found by experience that cattle kept dry and warm consumed less, and fattened better.

Mr. HENSON rose and asked what mixture of food Mr. Bernays would recommend. He was at a loss to know how to put these different elements together. He hoped to hear at some fu-

ture discussion how to produce the largest amount of fat, without losing sight of the manure heap. He proposed the health of "Rev. E. Wilson;" who rose and returned thanks, and expressed his gratification with the discussion. He always found instruction at their meetings.

Mr. STOKES suggested that tables of the quantity and quality of food recommended, should be drawn out and some of the members requested to keep an ox or two, and give the result of their experiments for the benefit of others.

Mr. HENSON made another observation or two relative to the quantities of food and the manure heap, and

Mr. BERNAYS rose and said—I can only say, in answer to Mr. Henson, that I shall be happy to answer his questions as to the necessary quantities of food for producing flesh and fat, on some future occasion.

Mr. EATON said they had much science and a little practice. He would propose "The health of Mr. Walker," who would be able to give them a good deal of practical information (cheers).

Mr. WALKER said he had hoped to have taken his own pleasure on that occasion. He was almost afraid to venture an observation where there had been so much science. He felt inclined to walk away and largely benefit. As a practical man, he intended to make use of what part would suit him. The manure heap had been referred to, and he would observe, it was very well to have the whistle if they did not pay too dear for it. He would not recommend giving oil-cake to store cattle. They ought to be exceedingly careful how they gave oil-cake in the straw yard. Vegetables were the proper food for animals. He gave two pounds of oil-cake a day, and hay, to some cattle, and they did not do well; they were feverish; there was no swelling of the muscle, no lifting of the lean meat. He gave them turnips, and there was immediately an improvement.

Mr. SMITH made a few observations on the importance of attention to the temperature of the atmosphere to which cattle were exposed; and,

On motion of Mr. Henson, seconded by Mr. Stokes, it was resolved—"That this meeting entirely agrees with the science of nutrition now propounded, and recommends the practical farmer to test his theory by his experience."

Thanks were voted to the Chairman, and appropriately acknowledged; and the meeting, which occupied upward of four hours, separated.

SEX OF EGGS.—To know whether an egg will produce a male or female chick, it is directed to hold it between the eye and the candle, and if the vacancy caused by the air-bag, which every egg contains at the blunt end, appears to be on one side, it will produce a hen; if the vacancy be exactly in the centre, it will produce a cock. The largest eggs commonly produce cocks.

LIME.—Fertility does not always depend exclusively, or even very materially, on the presence of lime in the soil. Rich soils may contain two or twenty per cent. of lime, and so may poor ones.

TRIALS OF SULPHURIC ACID AND BONES FOR TURNIPS.

BY R. W. PURCHAS.

	T. cwt. lbs	
FIELD No. 1.—Soil, sandy loam upon old red sandstone, so completely worn out by the late tenant that a part without any manure, lying between the acre with acid and bones and the acre with dung, produced only, per acre.....	0	5 20
One acre, manured with 160 bushels of turf-ashes wetted with water.....	8	14 32
One acre, manured with 160 bushels of turf-ashes, 2 bushels of fine bone-dust, and 80 lbs. of brown acid (oil of vitriol), costing 12s.; the bones and acid dissolved and treated as below.....	14	5 68
One acre, manured with 20 yards of dung.	14	11 68

This field was limed with 108 bushels of lime per acre in 1842.

	T. cwt. lbs.	
FIELD No. 2.—Soil, stone brash upon old red sandstone, limed in 1841.		
One acre, manured with 15 bushels of coal-ashes and 15 bushels of charcoal-dust, drilled in with the seed, produced.....	4	8 64
One acre, manured with 80 lbs. of brown acid and 2 bushels of fine bone-dust dissolved, mixed with 500 gallons of water, and sprinkled with a water-cart over the land before ridging up; and 15 bushels of coal-ashes, and 15 bushels of charcoal-dust, drilled in with the seed.....	12	11 48
The Swedes (Skirving's) were planted on the ridge, the first and second weeks in July, at 24 inches; the plants thinned to 9 inches; horse and hand-hoed three times.		
Pulled, topped, tailed, and weighed, 14th January, 1845.		

I had the brown sulphuric acid, strength 1.750, at $\frac{3}{4}$ d. per lb., from that highly respectable manufacturer, Mr. James Gibbs, Bristol; and the fine bone-dust, of excellent quality, from Messrs. H. and T. Proctor, Bristol, at 26s. per quarter.

The acid and bones for field No. 1 were treated as follows:—for 1 acre, an empty hogshhead of about 100 gallons, with one head out, was used: 2 bushels (or 16 gallons) of bone-dust was put into the eask or tub, then 80 lbs. (or about 4½ gallons) of acid, the mass being well stirred; to this was added 24 gallons of *boiling* water; the mixture being well stirred the whole time the water was being put in, to keep down the violent ebullition that ensued. In a few minutes the bone-dust was perfectly dissolved, and fit for use. The mixture was then taken in the tub into the field, put by the heap of turf-ashes, which being very dry, about 500 gallons of water were gradually added to the mixture, and thrown over the ashes; which, being well mixed, were then put into carts and distributed with a shovel into the drills, the ground ridged up, and immediately sown.

I put in about 3 acres per day, using three old hogshheads or tubs (worth about 5s. each;) and, when taken to the field, two lots were put together, the empty tub being used to mix the proper quantity of water before throwing over the ashes.

A neighboring farmer had one carboy of acid last year; he used *dried mud* from a horse-pond to mix with the acid and bones; and he is so satisfied with the result that he has ordered 10 carboys of acid *this* year. My friend says the acid and bones beat every other manure, (guano, dung, &c.) and are the *cheapest* and best of all manures for growing turnips. The soil, a poor sand, was limed with 108 bushels per acre, immediately before the mixture was put on.

I am convinced that, without lime in the soil, acid and bones will not act; this I witnessed in a neighbor's field last year—the field six years ago was part of a common, it was then broken up, and part limed the following year. Last year the whole field was planted with turnips—using 2 bushels of bone-dust and 80 lbs. of acid per acre; put on as on my field No. 2: the result was, the part limed produced a good crop for the season, beating 15 loads of dung; but the turnips on the part not limed, although coming up well, very soon died away, and in less than a month not a single plant was to be seen.

In the field No. 2, the acid and bones were treated as No. 1; when taken to the field in a water-cask holding 250 gallons of water (twice filled,) was used with half the quantity of mixture, and sprinkled over the land before being ridged up; the ashes were then drilled in with the acid.

His Grace the Duke of Richmond's plan of running the mixture and water *along the drills, after ridging*, is a much better plan than the above; and which, for the future, I shall adopt when using the mixture in a liquid state.

In every trial of acid and bones the turnips came into rough leaf a week before those planted the same day with other manures.

Pilstone, near Chepstow.

[Jour. of the Royal Agricul. Society of England.

ON THE USE OF SULPHURIC ACID WITH BONES AS COMPOST.

BY P. DAVIS.

WITH reference to Mr. Pusey's suggestion as to the propriety of using bone-dust (dissolved in sulphuric acid) along with *compost* instead of *water* for turnips, I can confirm his idea from practice, having last year manured 5 acres with only 13 bushels of bone-dust dissolved in 270 lbs. of sulphuric acid and 150 gallons of water. After standing twenty-four hours, the liquid was mixed with 3 cart-loads of *coal-ashes*, and left to remain for a week, during which time it was turned over two or three times. The mixture was then drilled along with the seed, and the result was a fair crop of common turnips, off a piece of poor land, without other manure, and at the cost of only 12s. 9d. per acre.

Milton House, near Penbridge,
Herefordshire.

[Ib.

THE HYDRAULIC RAM;

OR CHEAP METHOD OF HAVING A CONSTANT SUPPLY OF WATER.

It would be a waste of ink to dwell on the advantages of a constant and full supply of water about the homestead of every man's estate, in the country, and yet every reader may call to mind numberless instances where incalculable inconvenience and privation have been endured, and the most prodigal waste of labor committed from generation to generation, from that *vis inertiae*, that physical and moral lethargy of character, which too often leads us to drag on through life, neglecting expedients that the least thought would suggest, and the slightest exertion bring to our relief.

For years and years have we known large families to be supplied with all the water needed, or rather all that was used, but not a hundredth part of what was really *needed*, by keeping young persons constantly on the trot, to an unclean spring, sometimes at the distance of half a mile, bringing on their heads pails or "piggins" full at a time, when a cistern of simple construction made tight with water-cement, eight or ten feet in diameter and depth, would collect rain-water enough from the roof of the barn or the dwelling to give a constant supply of drinking water of the very best kind when filtered and iced. Again we have known, may it not be seen every day, where streams of water of the smallest volume might, with a very simple hydraulic contrivance, as we shall show, be made to afford a constant flow of pure water at the door of the kitchen, the dairy, and the stable.

So highly is the luxury of abundant water esteemed in this City, that in almost every house that is built, it is only necessary to turn a cock to have it at pleasure in every room and chamber.

Not aware of any thing more interesting to the Farmer, than the means of having at all times a full supply of water, not only for purposes strictly domestic, but for the use of all his domestic animals and for irrigation in our dry climate, we shall bring to the use of our patrons all the information we can collect, as to the various contrivances which may be resorted to for that purpose—we know how apt they are to be deterred from attempting any thing out of the common track, on account of the supposed or actual expense in the first instance, but a simple calculation of the remuneration to be derived from the saving of labor, and the money value,

to say nothing of the luxury, of a fuller supply of water, would convince them that a single year, some times even less, would reimburse them. There is to be considered, for example, as to the use of it for their domestic animals, not only the time that is saved, through the whole winter especially, in sending them to a distance to drink, but that they often suffer from not having a supply when Nature demands. The saving of manure too is not to be overlooked.

Our present purpose, however, is only to transfer for the use of our readers a few pages from a very valuable and interesting work, which ought to be added to the Library of every Farmer as well as every Mechanic, entitled "A descriptive and Historical account of Hydraulic and other Machines for raising water, ancient and modern, by THOMAS EW BANK." published in 1842 by D. Appleton & Co.

Although, according to this diligent and discriminating author, "the art of raising water, has ever been closely connected with the progress of civilization, so much so indeed, that the state of this art among a people may be taken as an index of their position on the scale of refinement, it seems passing strange that until this entertaining and instructive work made its appearance so recently, no one publication had ever been devoted to the great variety of devices which human ingenuity has devised for raising liquids.

Dry as may seem to be a history of *water-lifting* devices, we hardly know a book from which more curious and refreshing drafts of information might be made, than from this one by Mr. EW BANK, yet now we have not room to spare for that purpose, even if we could venture under any circumstances to give up for mere amusement, pages which can only be so used when amusement may be blended with obvious utility. Accordingly, we can only appropriate at present space for extracts explanatory of the principles and construction of the Hydraulic Ram of *Montgolfier*, which, as will be seen, may be adapted to every location in the country where there is the smallest stream of running water. How many farmers are there who have this invaluable resource unemployed, and who, by placing this paper in the hands of any honest ingenious mechanic, might at small expense have a perennial flow of water at his dwelling and barn-yard, for cooking, washing, bathing,

for watering his poultry, his stock, his dairy and his garden, and for a thousand uses that would suggest themselves, were the water at hand?

Of the machines appropriated to the fourth division of this work, centrifugal pumps and a few others have already been described. There remain to be noticed, the water ram, *canne hydraulique*, and devices for raising water by means of steam and other elastic fluids.

If the various operations of the lower animals were investigated, a thousand devices that are practiced by man would be met with, and probably a thousand more of which we yet know nothing. Even the means by which they defend themselves and secure their food or their prey, are calculated to impart useful information. Some live by stratagem, laying concealed till their unsuspecting victims approach within reach—others dig pitfalls to entrap them; and others again fabricate nets to entangle them, and coat the threads with a glutinous substance resembling the bird-lime of the fowler. Some species distill poison and slay their victims by infusing it into their blood; while others, relying on their muscular energy, suffocate their prey in their embraces and crush both body and bones into a pulpy mass. The tortoise draws himself into his shell as into a fortress and bids defiance to his foes; and the porcupine erects around his body an array of bayonets from which his enemies retire with dread. The strength of the ox, the buffalo and rhinoceros is in their necks, and which they apply with resistless force to gore and toss their enemies.—The elephant by his weight treads his foes to death; and the horse by a kick inflicts a wound that is often as fatal as the bullet of a rifle; the space through which his foot passes adding force to the blow.

There are numerous proofs of some of the lower animals being aware that the momentum of a moving body is increased by the space through which it falls. Of several species of birds which feed on shell fish, some, when unable to crush the shells with their bills, carry them up in the air, and let them drop that they may be broken by the fall. (The Athenian poet *Æschylus*, it is said, was killed by a tortoise that an eagle dropped upon his bald head, which the bird, it is supposed, mistook for a stone.) When the males of sheep or goats prepare to *butt*, they always recede backwards to some distance; and then rushing impetuously forward, (accumulating force as they go,) bring their foreheads in contact with a shock that sometimes proves fatal to both. The ancients, perhaps, from witnessing the battles of these animals, constructed military engines to act on the same principle. A ponderous beam was suspended at the middle by chains, and one end impelled, by the united efforts of a number of men at the opposite end, against walls which it demolished with slow but sure effect. The battering end was generally, and with the Greeks and Romans uniformly, protected by an iron or bronze cap in the form of a ram's head; and the entire instrument was named after that animal. It was the most destructive of all their war machinery—no building, however solid, could long withstand its attacks. Plutarch, in his life of Anthony, mentions one *eighty feet* in length.

The action of the ram is familiar to most people, but it may not be known to all that similar results might be produced by a liquid as by a solid—that a long column of water moving

with great velocity might be made equally destructive as a beam of wood or iron—yet so it is. Waves of the sea act as water-rams against rocks or other barriers that impede their progress, and when their force is increased by storms of wind, the most solid structures give way before them. The old light-house on the Eddystone rocks was thus battered down during a storm in 1703, when the engineer, Mr. Winstanley, and all his people perished.

The increased force which water acquires when its motion is accelerated, might be shown by a thousand examples: a bank or trough that easily retains it when at rest, or when slightly moved, is often insufficient when its velocity is greatly increased. When the deep lock of a canal is opened to transfer a boat or a ship to a lower level, the water is permitted to descend by slow degrees: were the gates opened at once, the rushing mass would sweep the gates below before it, or the greater portion would be carried in the surge quite over them—and perhaps the vessel also. A sluggish stream drops almost perpendicularly over a precipice, but the momentum of a rapid one shoots it over, and leaves, as at Niagara, a wide space between.—It is the same with a stream issuing from a horizontal tube—if the liquid pass slowly through, it falls inertly at the orifice, but if its velocity be considerable, the jet is carried to a distance ere it touches the ground. The level of a great part of Holland is below the surface of the sea, and the dykes are in some parts thirty feet high; whenever a leak occurs, the greatest efforts are made to repair it immediately, and for the obvious reason that the aperture keeps enlarging and the liquid mass behind is put in motion towards it; thus the pressure is increased and, if the leak be not stopped, keeps increasing till it bears with irresistible force all obstructions away. A fatal example is recorded in the ancient history of Holland:—An ignorant burgher, near Dort, to be revenged on a neighbor, dug a hole through the dyke opposite the house of the latter, intending to close it after his neighbor's property had been destroyed; but the water rushed through with an accelerating force, till all resistance was vain, and the whole country became deluged. The ancients were well aware of this accumulation of force in running waters. Allusions to it are very common among the oldest writers, and various maxims of life were drawn from it. The beginning of strife, says Solomon, "is as when one leeteth out water"—the "breach of waters"—"breaking forth of waters"—"rushing of mighty waters," &c. are frequently mentioned, to indicate the irresistible influence of desolating evils when once admitted.

That the force which a running stream thus acquires may be made to drive a portion of the liquid far above the source whence it flows, is obvious from several operations in nature.—During a storm of wind, long swelling waves in the open sea alternately rise and fall, without the crests or tops of any being elevated much above those of the rest; but when they meet from opposite directions, or when their progress is suddenly arrested by the bow of a ship, by rocks, or other obstacles, part of the water is driven to greater elevations. There is a fine example of this at the Eddystone rocks—the heavy swells from the Bay of Biscay and from the Atlantic, roll in and break with inconceivable fury upon them, so that volumes of water are thrown up with terrific violence, and the

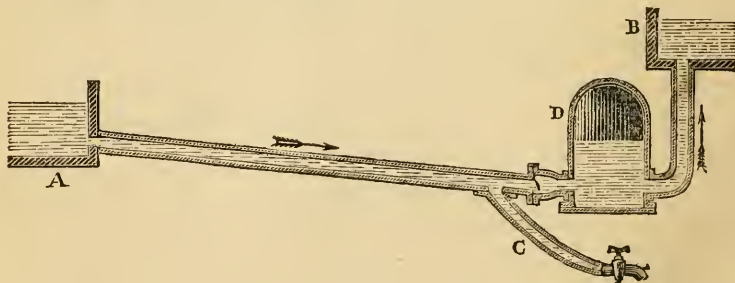
celebrated light-house sometimes appears from this cause like the pipe of a fountain enclosed in a stupendous *jet d'eau*. The light-room in the old light-house was sixty feet above the sea, and it was often buried in the waves, so immense were the volumes of water thrown over it.

The hydraulic ram raises water on precisely the same principle: a quantity of the liquid is set in motion through an inclined tube, and its escape from the lower orifice is made suddenly to cease, when the momentum of the moving mass drives up, like the waves, a portion of its own volume to an elevation much higher than that from which it descended. This may be illustrated by an experiment familiar to most people. Suppose the lower orifice of a tube (whose upper one is connected to a reservoir of water) be closed with the finger and a very minute stream be allowed to escape from it in an upward direction—the tiny jet would rise nearly to the surface of the reservoir; it could not, of course, ascend higher—but if the finger were then moved to one side so as to allow a free escape till the whole contents of the tube were rapidly moving to the exit, and the orifice then at once contracted or closed as before, the jet would dart far *above* the reservoir; for in addition to the hydrostatic pressure which drove it up in the first instance, there would be a new force acting upon it, derived from the *motion* of the water. As in the case of a hammer of a few pounds weight, when it rests on the anvil it exerts a pressure on the latter with a force due to its weight only, but when put in motion by the hand of the smith, it descends with a force that is equivalent to the pressure of perhaps a ton.

Every person accustomed to draw water from pipes that are supplied from very elevated sources, must have observed, when the cocks or discharging orifices are suddenly closed, a jar or tremor communicated to the pipes, and a snapping sound like that from smart blows of a hammer. These effects are produced by blows which the ends of the pipes receive from the water; the liquid particles in contact with the plug of a cock, when it is turned to stop the discharge, being forcibly driven up against it by those constituting the moving mass behind.—

The philosophical instrument named a *water hammer* illustrates this fact. The effect is much the same as if a solid rod moved with the same velocity as the water through the tube until its progress was stopped in the same manner, except that its momentum would be concentrated on that point of the pipe against which it struck, whereas with the liquid rod the momentum would be communicated equally to, and might be transmitted from *any* part of, the lower end of the tube; hence it often occurs that the ends of such pipes, when made of lead, are swelled greatly beyond their original dimensions. We have seen some $\frac{3}{4}$ of an inch bore, become enlarged to $1\frac{1}{4}$ inches before they were ruptured. At a hospital in Bristol, England, a plumber was employed to convey water through a leaden pipe from a cistern in one of the upper stories to the kitchen below, and it happened that the lower end of the tube was burst nearly every time the cock was used. After several attempts to remedy the evil, it was determined to solder one end of a smaller pipe immediately behind the cock, and to carry the other end to as high a level as the water in the cistern; and now it was found that on shutting the cock the pipe did not burst as before, but a jet of considerable height was forced from the upper end of this new pipe: it therefore became necessary to increase its height to prevent water escaping from it—upon which it was continued to the top of the hospital, being twice the height of the supplying cistern, but where, to the great surprise of those who constructed the work, some water still issued: a cistern was therefore placed to receive this water, which was found very convenient, since it was thus raised to the highest floors of the building without any extra labor. Here circumstances led the workmen to the construction of a water-ram without knowing that such a machine had been previously devised.

The first person who is known to have raised water by a ram, designed for the purpose was, Mr. Whitehurst, a watchmaker of Derby, in England. He erected a machine similar to the one represented by the next figure, in 1772. A description of it was forwarded by him to the Royal Society, and published in vol. IV. of their Transactions.



No. 167. Whitehurst's Water-Ram.

A represents the spring or reservoir, the surface of the water in which was of about the same level as the bottom of the cistern B. The main pipe from A to the cock at the end of C, was nearly six hundred feet in length, and one and a half inches bore. The cock was sixteen feet below A, and furnished water for the kitchen, offices, &c. When it was opened the liquid

column in A C was put in motion, and acquired a velocity due to a fall of sixteen feet; and as soon as the cock was shut, the momentum of this long column opened the valve, upon which part of the water rushed into the air-vessel and up the vertical pipe into B. This effect took place every time the cock was used, and as water was drawn from it at short intervals for

household purposes, "from morning till night—all the days in the year," an abundance was raised into B, without any exertion or expense.

Such was the first water-ram. As an original device, it is highly honorable to the sagacity and ingenuity of its author; and the introduction of an air vessel, without which all apparatus of the kind could never be made durable, strengthens his claims upon our regard. In this machine he has shown that the mere act of drawing water from long tubes for ordinary purposes, may serve to raise a portion of their contents to a higher level; an object that does not appear to have been previously attempted, or even thought of. The device also exhibits another mode, besides that by pressure engines, of deriving motive force from liquids thus drawn, and consequently opens another way by which the immense power expended in raising water for supplying cities, may again be given out with the liquid from the lateral pipes. Notwithstanding the advantages derived from such an apparatus, under circumstances similar to those indicated by the figure, it does not appear to have elicited the attention of engineers, nor does Whitehurst himself seem to have been aware of its adaptation as a substitute for forcing pumps, in locations where the water drawn from the cock was not required, or could not be used. Had he pursued the subject, it is probable the idea of opening and closing the cock (by means of the water that escaped) with some such apparatus as that invented by Fludd, would have occurred to him, and then his machine being made self-acting, would have been applicable in a thousand locations. But these additions were not made, and the consequence was, that the invention was neglected, and but for the one note to be described, it would most likely have passed into oblivion, like the steam machines of Branca, Kireher, and Decaus, till called forth by the application of the same principle in more recent devices.

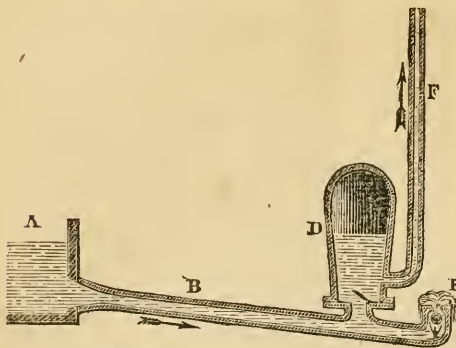
Whenever we peruse accounts of the labors of ingenious men, in search of new discoveries in science or the arts, sympathy leads us to rejoice at their success and to grieve at their failure: like the readers of a well written novel who enter into the views, feelings and hopes of the hero; realize his disappointments, partake of his pleasures, and become interested in his fate; hence something like regret comes over us, when an industrious experimenter, led by his researches to the verge of an important discovery, is, by some circumstance, diverted (perhaps temporarily) from it; and a more fortunate or more sagacious rival steps in and bears off the prize from his grasp—a prize, which a few steps more would have put him in possession of. Thus Whitehurst with the water-ram, like Papin with the steam engine, discontinued his researches at the most interesting point—at the very turning of the tide that would have carried him to the goal; and hence the fruit of both their labors has contributed but to enhance the glory of their successors.

The *Bélier hydraulique* of Montgolfier was invented in 1796. (Its author was a French paper maker, and the same gentleman who, in conjunction with his brother, invented balloons in 1782.) Although it is on the principle of Whitehurst's machine, its invention is believed to have been entirely independent of the latter. But if it were even admitted that Montgolfier was acquainted with what Whitehurst had done, still he has, by his improvements, made

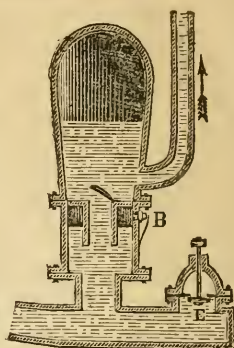
the ram entirely his own. He found it a comparatively useless device, and he rendered it one of the most efficient—it was neglected or forgotten, and he not only revived it, but gave it a permanent place among hydraulic machines, and actually made it the most interesting of them all. It was, previous to his time, but an embryo; when, like another Prometheus, he not only wrought it into shape and beauty, but imparted to it, as it were, a principle of life, that rendered its movements *self-acting*; for it requires neither the attendance of man, nor any thing else, to keep it in play, but the momentum of the water it is employed to elevate. Like the organization of animal life, and the mechanism by which the blood circulates, the pulsations of this admirable machine incessantly continue day and night, for months and years while nothing but deficiency of the liquid, or defects in the apparatus can induce it to stop.—It is, compared to Whitehurst's, what the steam-engine of Watt is to that of Savary or Newcomen.

Montgolfier positively denied having borrowed the idea from any one—he claimed the invention as wholly his own, and there is no reason whatever to question his veracity. The same discoveries have often been, and still are, made in the same and in distant countries, independently of each other. It is a common occurrence, and from the constitution of the human mind will always be one. A patent was taken out in England for self-acting rams in 1797 by Mr. Boulton, the partner of Watt, and as no reference was made in the specification to Montgolfier, many persons imagined them to be of English origin, a circumstance that elicited some remarks from their author. "Cette invention (says Montgolfier) n'est point d'origine Anglaise, elle appartient toute entière à la France; je déclare que j'en suis le seul inventeur, et que l'idée ne m'en a été fournie par personne; il est vrai qu'un de mes amis a fait passer, avec mon agrément, à MM. Watt et Boulton, copie de plusieurs dessins que j'avais faits de cette machine, avec un mémoire détaillé sur ses applications. Ce sont ces mêmes dessins qui ont été fidèlement copiés dans la patente prise par M. Boulton à Londres, en date du 13 Décembre 1797; ce qui est une vérité dont il est bien éloigné de disconvenir, ainsi que le respectable M. Watt." We have inserted this extract from Hachette, because we really supposed on reading the specification of Boulton's patent in the Repertory of Arts, (for 1798, vol. ix.) that the various modifications of the ram there described were the invention of that gentleman. The patent was granted to "Matthew Boulton, for his invention of improved apparatus and methods for raising water and other fluids."

No. 168 represents a simple form of Montgolfier's ram. The motive column descends from a spring or brook A through the pipe B, near the end of which an air chamber D, and rising main F, are attached to it as shown in the cut. At the extreme end of B, the orifice is opened and closed by a valve E, instead of the cock in No. 167. This valve opens downwards and may either be a spherical one as in No. 168, or a common spindle one as in No. 169. It is the play of this valve that renders the machine self-acting. To accomplish this, the valve is made of, or loaded with, such a weight as just to open when the water in B is at rest; i. e. it must be so heavy as to overcome the pressure against its under side when closed, as represented at



No. 163. Montgolfier's Ram.



No. 169. The same.

No. 169. Now suppose this valve open as in No. 163, the water flowing through B soon acquires an additional force that carries up the valve against its seat; then, as in shutting the cock of Whitehurst's machine, a portion of the water will enter and rise in F, the valve of the air chamber preventing its return. When this has taken place the water in B has been brought to rest, and as in that state its pressure is insufficient to sustain the weight of the valve, E opens; (descends) the water in B is again put in motion, and again it closes E as before, when another portion is driven into the air vessel and pipe F; and thus the operation is continued, as long as the spring affords a sufficient supply and the apparatus remains in order.

The surface of the water in the spring or source should always be kept at the same elevation, so that its pressure against the valve E may always be uniform—otherwise the weight of E would have to be altered as the surface of the spring rose and fell.

This beautiful machine may be adapted to numerous locations in every country. When the perpendicular fall from the spring to the valve E is but a few feet, and the water is required to be raised to a considerable height through F, then, the length of the ram or pipe B, must be increased, and to such an extent that the water in it is not forced back into the spring when E closes, which will always be the case if B is not of sufficient length. Mr. Millington, who erected several in England, justly observes that a very insignificant pressing column is capable of raising a very high ascending one, so that a sufficient fall of water may be obtained in almost every running brook, by damming the upper end to produce the reservoir, and carrying the pipe down the natural channel of the stream until a sufficient fall is obtained. In this way a ram has been made to raise one hundred hog-heads of water in twenty-four hours to a perpendicular height of one hundred and thirty-four feet, by a fall of only four feet and a half.—M. Fischer of Schaffhausen, constructed a water-ram in the form of a beautiful antique altar, nearly in the style of that of Æsculapius, as represented in various engravings. A basin about six inches in depth, and from eighteen to twenty inches in diameter, received the water that formed the motive column. This water flowed through pipes three inches in diameter that descended in a spiral form into the base of the altar; on the valve opening a third of the

water escaped, and the rest was forced up to a castle several hundred feet above the level of the Rhine.

A long tube laid along the edge of a rapid river, as the Niagara above the falls, or the Mississippi, might thus be used instead of pumps, water wheels, steam-engines and horses, to raise the water over the highest banks and supply inland towns, however elevated their location might be; and there is scarcely a farmer in the land but who might, in the absence of other sources, furnish his dwelling and barns with water in the same way, from a brook, creek, rivulet or pond.

If a ram of large dimensions, and made like No. 163, be used to raise water to a great elevation, it would be subject to an inconvenience that would soon destroy the beneficial effect of the air chamber. When speaking of the air vessels of fire-engines, in the third book, we observed that if air be subjected to great pressure in contact with water, it in time becomes incorporated with or absorbed by the latter.—As might be supposed, the same thing occurs in water-rams; as these when used are incessantly at work both day and night. To remedy this, Montgolfier ingeniously adapted a very small valve (opening inwards) to the pipe beneath the air chamber, and which was opened and shut by the ordinary action of the machine. Thus, when the flow of the water through B is suddenly stopped by the valve E, a partial vacuum is produced immediately below the air chamber by the recoil of the water, at which instant the small valve opens and a portion of air enters and supplies that which the water absorbs. Sometimes this *suffing* valve, as it has been named, is adapted to another chamber immediately below that which forms the reservoir of air, as at B in No. 169. In small rams a sufficient supply is found to enter at the valve E.

Although air chambers or vessels are not, strictly speaking, constituent elements of water-rams, they are indispensable to the permanent operation of these machines. Without them, the pipes would soon be ruptured by the violent concussion consequent on the sudden stoppage of the efflux of the motive column. They perform a similar part to that of the bags of wool, &c. which the ancients, when besieged, interposed between their walls and the battering rams of the besiegers, in order to break the force of the blows.

STEAMED BONES.

[To the Editor of the North British Agriculturist.]

SIR:—As a constant reader of your journal, I have from time to time watched the discussion regarding the preparation for manure by steam to bones, as recommended by Mr. Blackhall, of Edinburgh; and as I intended to have erected a mill for crushing bones for the use of my own farm, I thought of adopting Mr. Blackhall's plan, and have it now in operation. I have steamed four fulls of my tank, (which holds two tons of rough bones,) for four, five, and six hours, at a pressure of 50 lbs. on the inch, and am now applying the stuff to my turnip crop, at the rate of 10 to 15 bushels per acre, with 20 cart-loads of dung. I have, however, sown a part by itself, and will communicate to you the result when the crops are advanced.

I may state, in the mean time, that my opinion is not favourable to this mode of preparation of bones. I have been in the habit of crushing bones in the usual way by rolling, and I think it quite likely that the old way is better than the new, and also as cheap. I find that after the bones are steamed, they would still require a mill to grind them. It takes two of my men ten hours with mallets on a stone, to beat down one ton of bones; and with a small mill I

had attached to my water-wheel, I could crush four to five tons of bones to go through a three-quarter riddle in a day; and although I think it quite likely that the half of the quantity of bones prepared by steam will raise an equally good crop of turnips, as the double of the quantity prepared by crushing in the usual way, yet I am sure they will not last so long in the ground. The half of the expense of grinding by rollers, is from picking iron, stones, &c., from the bones to prevent breakage of machinery, and I thought this would be quite obviated by the steaming process; but I now find that I will be obliged to erect a machine for grinding the bones after being steamed, and must pick the bones as carefully as I used to do, and therefore I am of opinion that the steaming process will be no advantage. I have a pipe from the bottom of the bone tank, and by it draw off all the grease and gelatine into a tank, and again have mixed this with ground wood charcoal, and mixed it again up with the bruised bones, so that nothing is lost. And you may expect to hear from me again, when I can inform you regarding the progress of my crop. I am, sir, &c.,

A BONE-GATHERER.

NOTES ON THE MANAGEMENT OF SHEEP:

FOUNDED UPON REPORTS OF COMPETITORS WHO GAINED PREMIUMS AT THE WOOL COMPETITION HELD AT EDINBURGH IN 1845.

CHEVIOT SHEEP.—*Mr. Anderson, Sandhope, Selkirk.*—The flock consists of about 1,000 ewes of ages varying from one to six years, and it was reared exclusively on coarse hill pasture, elevated from 1,000 to 2,000 feet above the level of the sea. The stock ewes get no artificial food, except on the occasion of a severe storm, when they are supplied with a little natural hay. To afford such aid, unless urgently required, would tend to lessen the exertion of the sheep to provide for themselves. The tups are bred from selected ewes by the best rams, and put on grass and turnips during winter and spring. The washing takes place about the end of June in a pond, into which the sheep are made to leap from a platform raised about two feet above the surface of the water, and then caused to swim twice or oftener across, as may be necessary for cleansing them. The clipping is performed about eight days after. The animals are laid on a stool, the operator proceeding lengthways in parallel lines an inch in breadth, and making the cuts as low and smooth as possible. The price obtained for the clip of Cheviot wool in 1845 was 28s. 6d. per stone of 24 lbs.; and for the black-faced clip, 13s. per stone. Wethers are not kept; but barren ewes, sold from the

hill pasture at the end of autumn, weigh about 13 lbs. per quarter. The average weight of a Cheviot fleece is 3 lbs. 7 oz.; and of a black-faced, 4 lbs.

The black-faced flock, containing 600 breeding ewes, is similarly managed.

Mr. Gentle, Dell, Inverness.—The flock, in which there are 500 shearing ewes, is washed about the 18th of June. The sheep are driven three times through an arm of a fresh-water lake, having to leap into the water from a breastwork four feet high, and to swim from thirty to forty yards. The clipping follows about the 22d of the same month. It is done longitudinally, with an even and rather bare cut. The clipper is seated on a smearing-stool, which is covered with a tough sod, to prevent the animals being hurt. The pasturage consists of common mountain grasses, much intermixed with heather, and its altitude varies from 1,000 to 2,000 feet above the sea. In winter and spring, however, the sheep, when the inclemency of the weather makes it necessary, are brought to lower ground, at an elevation not exceeding 100 feet. The clips of 1844 and 1845 were sold at 18s. per stone of 24 lbs. Three-year-old ewes have been sold for £25 10s. per score—a price considered less

than their value. Such sheep, getting good turnip feeding till the end of March, would weigh, on an average, from 18 to 20 lbs. per quarter; but individual sheep have weighed 25 lbs. per quarter. The fleeces of the shearing ewes will be about 4 lbs. weight each on an average; but, taking fleeces of all classes, the average per fleece will be about 5 lbs. The fleeces are understood to consist of laid wool.

Mr. Tweedie, Deuchrie, Prestonkirk.—The flock contains from 300 to 400 shearlings. The sheep are washed in June by making them leap three or four times into a pool, and swim fifteen or twenty yards. They are generally clipped within a week after, the shears being used longitudinally. The pasturage is on the Lammermuirs, poor and mostly heath. In winter and spring, turnips and hill pasture are the means of support, each being afforded daily. The clip of hogg and ewe wool in 1845 sold at 29s. 6d. per stone of 24 lbs. For the last five years, a bath mixture, prepared by Brown of Haddington, has been used in autumn; and, while it has kept the stock quite clean, it is easily applied. Three men to dip, and a boy to drive water, can easily bathe 600 or 800 sheep in a day. The apparatus is not very expensive, and it promotes the comfort both of men and sheep. It consists of a tub for dipping, and a large trough in which the sheep, after being dipped, stand to drip—and so constructed that the drippings run back into the tub. Since the adoption of this plan, the wool has always been considered very fine, and, indeed, the best shown at a local exhibition.

BLACK-FACED SHEEP.—*Mr. Vere Irving, Newtown House, Moffat.*—In the district of Moffat it is not customary to wash black-faced sheep. The shearling and barren ewes, and the rams, were, in 1845, clipped on the 2d July, and the rest of the flock, consisting of ewes rearing lambs, on the 19th of the same month. In 1844, the clipping of the latter class of stock took place some days earlier; but this is not considered advisable, as the wool last season was better risen than in the preceding year. In clipping black-faced sheep, the shears are run from head to tail; but, in the case of Cheviot sheep, they are directed over the shoulder and back. The latter method produces a neater clip, but the former is more expeditious. The farm rises from a base of 910 feet above the level of the sea, to an altitude of 1,550 feet above it. The lower portion, which is divided into parks, and is well sheltered, is occupied with dairy-stock, grain, green-crop and hay; and, for the greater part of the year, the sheep are entirely confined to the upper division, or steep ground. The pasture is short and of a bright color, intermixed with coarse bent, which requires to be burnt in spring. Some years ago, part of the bent ground was plowed, heavily limed, and sown with grass seed; and thus a great improvement was effected, the bent having been replaced by a bright green pasturage, which cannot be distinguished from those portions of the ground that are not naturally covered with bent. In winter and spring, the sheep, if their condition seems to demand it, are admitted into such of the lower parks as have been cut for hay, or pastured during the summer by the dairy stock, which is then fed in the house. The sheep are let down from the higher ground in the morning, but are invariably put out of the parks between one and two o'clock in the afternoon. In the event of a severe snow-storm, they are fed

with meadow hay, which is carried out to them. In weaning the ewe lambs intended for stock, they are put into one of the parks for a week, and then allowed to return to their mothers, whom they recognize, but no longer attempt to suck. An advantage of this plan is that the lambs follow their dams through the winter, and, if there is snow, they are helped by them to scrape, so that they do not so often need to be fed with hay as when they are kept separate all the winter. The last clip sold fetched 12s. per stone of 24 lbs. for fleeces of all denominations.

CROSS BETWEEN CHEVIOT AND LEICESTER SHEEP.—*Mr. Brown, Halls, Dunbar.*—In the flock there are about 600 hogs. The usual period for washing is about the end of May or beginning of June; and the plan followed is that of placing four or five men in a stream of clear water up to their middle, one above the other, and passing the sheep, one by one, from the lowest to the highest—each man, in turn, plunging the animal in the water. The shearing follows in three or four days, when the natural oiliness of the wool, extracted by the washing, is restored. The operation is performed in an open shed, laid with green sods. One or two women attend for the purpose of freeing the fleeces from particles of clotted wool, and afterward winding them. The price obtained for the clip last sold was 31s. per stone of 24 lbs.—The pasture on which the Cheviot ewes are grazed, from which the half-bred lambs are reared, is situated on the northern boundary of the Lammermuirs. The lambs are weaned about the middle of August, when they are removed to the sown pastures on the farm. In November they are bathed with a mixture of tobacco liquor and spirit of tar, in the proportion of half a Scotch pint of the former to a wine-glassful of the latter for each sheep. They have then a few turnips laid on their pasture, and when they have fully acquired a taste for them, they are folded on turnips alone during winter and spring, or until grass is ready for them—which, on the high situation to which they are transferred, is, in ordinary seasons, about the middle of April or beginning of May.

HOME AND FRIENDS.

BY CHARLES SWAIN.

OH! there's a power to make each hour
As sweet as Heaven designed it;
Nor need we roam to bring it home,
Though few there be that find it!
We seek too high for things close by,
And lose what Nature found us;
For life hath here no charm so dear
As home and friends around us!

We oft destroy the present joy
For future hopes—and praise them,
While flowers as sweet bloom at our feet,
If we'd but stoop to raise them!
For things afar still sweetest are
When Youth's bright spell hath bound us;
But soon we're taught the earth hath naught
Like home and friends around us!

The friends that speed in time of need,
When Hope's last reed is shaken,
To show us still that, come what will,
We are not quite forsaken:
Though all were night, if but the light
From Friendship's altar crowned us,
'T would prove the bliss of earth was this—
Our home and friends around us!

ANECDOTES OF BIRDS.

It is a general observation of the country people, that when there is an unusual number of hawthorn and holly berries, there will be a hard winter. If it be so, it is a proof of the care which the Almighty takes of his creatures. How many birds would perish during a severe winter, if this provision had not been made for them! Even the circumstance of some springs not freezing is an instance of the same goodness. If they did, the destruction of animal life would be much greater than it now is. At present many birds are able in hard weather to find water and food. The robin, thrush, and blackbird, with woodcocks and snipes, resort to these springs, and are able to support life on the worms and insects they find in or by the side of them, till more genial weather arrives.* In deep snow many birds frequent woods, where, amongst dead or decayed trees, and in the bark of others, they discover and feed upon insects. Horses and deer scrape away the snow with their feet to get at the grass, and hares and rabbits feed on the bark of trees. The titmouse in frosty weather gets near houses and picks meat from bones. The hedge-sparrow and wren search for insects at the bottoms of hedges, where the snow has not penetrated. The wood-pigeon feeds on the tops of turnips; while sparrows, finches, yellowhammers, &c., get into rick-yards to satisfy their hunger. Most birds are thus able to procure some sort of sustenance during a hard winter; and some animals remain during that period in a state of torpor, from which the influence of the sun in spring revives them. Insects appear but little affected by cold weather, as we see many on the first mild day after the severest frosts. Bees survive the coldest winters in Russia, and afterwards lay up much store of honey.

We thus see that, however miserable the condition of birds in severe weather may appear to a cursory observer, they have resources provided for them in various ways. The same beneficent Being who created them provided at the same time for their subsistence. It is man who occasions the chief miseries of the creatures which surround him. When, therefore, we consider that these creatures are the objects of God's care, how careful ought we to be never to inflict any unnecessary pain or misery upon

them! I should not think kindly of that man who could wantonly put his foot upon a worm which was crossing his path, or destroy a fly for the gratification of doing so.

I take great pleasure in watching the activity of those birds which feed on flies. The water-wagtail darts after them with great rapidity, and when collecting them for her young, places each fly as she catches it in the corner of her mouth till there is a considerable accumulation of them. When she opens her mouth to seize a fly, one expects to see the others fall from it; but this never happens. I have also observed that, when a wagtail has a young cuckoo to feed, she collects a larger number of flies in her mouth than when she is engaged in supporting her own young. When this bird has collected a sufficiency, she gives two or three chirps as she approaches her nest, which her brood understand, and they are ready with open mouths to receive the food. The young cuckoo understands these chirps, and I have seen him eagerly prepare himself for the approach of his foster-mother long before he could see her.

I have never observed that the swallow, in hawking for flies for her young, accumulates them by the side of her mouth, as the wagtail does. One hears the snap of her beak when she takes a fly, and it is curious to see the instinct which prevents seizing a wasp during her rapid flight. Swallows are indefatigable in providing food for their young while they are in the nest; but should the nest by any accident be brought to the ground before the brood are able to fly, the old birds take no further notice of them: they are left to crawl about and die. The affection which birds show to their young is very great, and continues in many instances till the next breeding season. Our common hen will keep her last brood by her side till she lays again, and I have observed that they roost next her during a whole winter after they are full-grown. Her interest in them does not cease till the following spring, when she has a fresh charge to bring up. An instance of this care and affection in sparrows is mentioned by Mr. Graves in his *British Ornithology*.

"Having noticed," he says, "that the parent birds continued to bring food to the nest for some months after the brood had left it, we had the curiosity to place a ladder against the wall for the purpose of ascertaining the cause, when, to our surprise, we found a full-grown bird in the nest,

* "Birds are extremely important creatures for the economy of nature in general. They destroy innumerable insects, and the thoughtless extirpation of some birds, supposed to be noxious, such as sparrows, crows, &c., has generally given rise to an infinitely more prejudicial multiplication of vermin."

BLUMENBACH.

which had got its leg completely entangled in some thread which had formed part of the nest, in such a manner as to entirely prevent it leaving the nest. Wishing to see how long the industry of the old birds would be extended in behalf of their imprisoned offspring, we left the bird and nest in the state we found it, and observed that the parent birds continued to supply food during the whole of the autumn and some part of the winter months; but the weather setting in very severe soon after Christmas, fearing the severity of the weather would occasion the death of the imprisoned bird, we disengaged its leg, and in a day or two it accompanied the old ones in search of food; but they continued to feed it till the month of March, and during the whole time they all nestled in the same spot."

Some birds sit so close on their eggs, that no approach of danger can induce them to quit their nest. Gilbert White gives a very interesting anecdote of this in the case of a raven. "In the centre of a grove there stood an oak, which, though shapely and tall on the whole, bulged out into a large excrescence about the middle of the stem. On this a pair of ravens had fixed their residence for such a series of years, that the oak was distinguished by the title of the Raven-tree. Many were the attempts of the neighbouring youth to get at this eyrie: the difficulty whetted their inclinations, and each was ambitious of surmounting the arduous task. But when they arrived at the swelling, it jutted out so in their way, and was so far beyond their grasp, that the most daring lads were awed, and acknowledged the undertaking to be too hazardous. So the ravens built on, nest upon nest, in perfect security, till the fatal day arrived in which the wood was to be levelled. It was in the month of February when those birds usually sit. The saw was applied to the butt, the wedges were inserted into the opening, the woods echoed to the heavy blows of the beetle or mallet, the tree nodded to its fall; but still the dam sat on. At last, when it gave way, the bird was flung from her nest; and, though her parental affection deserved a better fate, was whipped down by the twigs, which brought her dead to the ground."

It is not easy to account for the variation we sometimes perceive in the plumage of birds of the same species. I have observed a rook with one white wing during the last three years in the rookery in Hampton-Court Park; and I saw a sparrow nearly white among a flock of those birds at West Molesey. A linnet was shot and brought to me from the same place, which was beautifully mottled with white and brown.

Some years ago I was shown some white blackbirds in the grounds of a nobleman at Blackheath, which had bred there; and what showed this was not an accidental circumstance, they produced young of the same colour as themselves.

Partridges manifest great caution in choosing the place where they intend to fix their nest. I have observed them remain near the same spot for some weeks before the female lays her eggs; and if in the mean time they should discover the retreat of any animal in the neighbourhood, who is likely to be injurious to them, they shift their quarters. I have generally noticed that partridges lodge themselves at night near the middle of a field, probably being aware that they are safer in this situation from the attacks of stoats or weasels, than if they got nearer hedges, under the roots or banks of which these animals conceal themselves. Some birds utter a peculiarly plaintive cry on the approach of danger. Even when they are concealed in the midst of a thick hedge they give warning, should any marauder in the shape of a cat or a weasel come near them. There is something in this mournful cry which cannot be misunderstood. The blackbird and thrush have it, but I have more generally observed it in the hedge-sparrow and red-breast.

There is something extremely amusing in watching the motions of a family of the long-tailed titmouse, or, indeed, of any of the *Parus* tribe. The parents and their young, which are very numerous, associate together from the time they leave their nest to the following spring. The incessant call they make seems intended to keep the whole family together in their passage through a wood, or among thick shrubs, in search of insects. Their motions and flight are very quick; and there is a pleasing cheerfulness and rapidity in all they do. The complacency in the notes of young birds, while they are receiving food from the old ones, always gives me the impression that it arises from gratitude and affection. Even after the parent bird has departed in search of more food, this little call of love is continued with a flutter of the wings, which is made with more rapidity as the note and flight of the mother are heard on her return. These little blandishments may be seen more particularly during the first few days after the young birds have left the nest. While they are in it, they preserve a greater degree of silence; and if any one approaches their nest, they squeeze into it, and keep themselves as flat as possible. This early instinct is peculiar to the young of wild animals; while those of many of our domestic kinds seem fearless of danger from their

very birth. Can we doubt, but that animals are indebted for this extraordinary apprehension of the danger which threatens them to an instinct implanted in them as their safeguard by a kind and beneficent Providence? If animals had escaped from some particular danger, they would naturally avoid it in future: but we see that they endeavour to shun it in cases where they have had no previous intimation of it. A young duck, as soon as it has escaped from its shell, will swim into a pond, and catch gnats and flies; but give it a wasp, and it immediately avoids an insect the sting of which would probably kill it. Young chickens, also, as soon as they are hatched, will take shelter under their mother's wings at the sight of a distant hawk in the air, while they show no dread at a turkey or goose, however nearly it may approach them, and although much more formidable in appearance. Amongst the wild cattle which are still found in two or three of our parks in England, the young calves show considerable ferocity as soon as they are dropped; while the calves of our domestic cows are remarkable for their gentleness, and allow

themselves to be handled without exhibiting any signs of fear or wildness. I have also observed that the kittens of a cat who prowls about our barns and outhouses, and avoids observation, are much more fierce in their nature than the young of a cat accustomed to live much in the house. The parents' ferocity or tameness seem to be imparted to the young with life. I always listen with great attention to the observations made by country people on the peculiar habits of some animals. Thus I have heard them say, that when the swans on the river Thames fly against the stream it is sure to rain, and that this will be the case when rooks are more than usually clamorous on their return to their roosting-places in an evening. The scream of a peacock, and the peevish incessant cry of a guinea-fowl, are also similar prognostications. The loud and discordant note of the woodpecker is a sign of a change of weather, and it is therefore in some places called the rain-fowl.

Should the deer in Hampton Court Park collect on a small mound there, I am assured that it portends an approaching storm.

MIGRATION OF SWALLOWS.

THE *unanimity of purpose* in swallows is one of those facts in natural history which I always reflect upon with wonder and curiosity. I allude to those vast collections of them which are seen every year, the attempts they appear to make in order to prepare themselves for their migration, and the sudden disappearance of the whole flock in one instant. They may be compared to one of those vast caravans which are known to assemble in the East, in order to make the passage of an extensive and dangerous desert, for the purpose of arriving at some far-distant place. Those have, however, a leader, and a sun, a moon and stars to guide them; while the swallow, with nothing to direct it but that unexplained instinct which a beneficent Creator has implanted in it, traverses the *deserts* of the air, passes through regions where it had never been before, and may be seen skimming the pools of Greece (its Mecca) with its wonted hilarity.

—“There
They twitter cheerful, till the vernal months
Invite them welcome back.”—

The mystery of instinct is, indeed, great, and human ingenuity cannot satisfactorily explain it. Here we see thousands of swallows, old and young, assembled together at one spot on the banks of the Thames in each year, and generally about the same day.

So many myriads of birds could not have been produced in the immediate neighbourhood, and therefore we may fairly presume that they have arrived from places far remote from each other. But what leads them to assemble on a little aye on the river Thames? How do the metropolitan and the Selborne swallows, those from villages in Sussex and Berkshire, or any other places, become possessed with such an unanimity of purpose? We see a vast flock assemble in the course of one day; they remain with us two or three, and after having made several circuitous flights, they suddenly disappear. But how is the moment of their departure determined upon? Some may be weary, and others young and weak, and yet not one is left behind.

I have been assured, by a gentleman residing on the sea-coast in Lancashire, and who is a great observer of the habits of swallows, that, after they have taken their annual departure, a sudden storm has sometimes happened and they have re-appeared in his neighbourhood. There can, I think, be no doubt, that swallows re-migrate from this country in the spring, if the weather is not genial, after their first arrival. I observed this to be the case in the spring of 1834. A large flight of them arrived in the neighbourhood of Richmond, Surrey, on the 5th

of April; but there was a prevalence of cold winds at the time, and they all disappeared. I did not see them again in any numbers until the beginning of May. The cold weather had driven them back to milder regions.

The migratory nature of swallows appears to be the same in all countries of the world where they are found, and they seem to possess the same impulse to guide them. Thus a friend, who had resided at the Cape of Good Hope, where a variety of the swallow tribe, is found, informed me that they all disappeared at a certain season of the year, as they do with us. I was also told by the captain of an Indiaman, that when he was in the Bay of Bengal, far from land, his ship was covered with swallows. The following extract of a letter from an observant traveller, will show the time of their appearance and disappearance at several places in Europe.

"Swallows disappeared at Rolle, in Switzerland, about the end of September: but on the 17th of October, I saw a pair as we passed among the mountains towards Fort le Cluse, on the road to Lyons, and my servant saw a pair on the 19th, when we got through the mountains into Bresse. Passing an islet of the Rhone, October 23d, near Pont St. Esprit, I again saw a swallow, which dipped to drink. I was ashore, November the 10th, at Porto Longona, in the isle of Elba, and saw three swallows crossing the port towards us: they flew almost straight, and very swiftly, and I should have supposed were going to Italy, if the distance had been less, and the sun not so near setting. Swallows appeared at Naples early in February, and on the 8th of March, martins were busy building under the eaves of a house at that place. On the 18th of March, swallows were first seen on the Lake of Geneva, and on the 25th were numerous. I am assured that a single martin commonly arrives first, as if to explore; and again withdraws, as if to fetch a colony."

Swallows, in taking their departure from this country, have been seen in a continuous line of more than half a mile in length. The flight began at four o'clock in the evening of the 27th of September, in a southern direction. These birds, however, do not arrive in as great numbers as they leave us.

In examining the head of a live swallow, it is impossible not to observe the extraordinary appearance of sagacity in it, and which is perfectly distinct from that of any other bird. Indeed it is quite impossible to observe the quickness, animation and sense of its eye, without being impressed with the

idea, that the Almighty Creator has endowed it with properties of a very peculiar kind, and nearly allied to reason.

The confidence which these birds place in the human race is not a little extraordinary. They not only put themselves, but their offspring, in the power of man. I have seen their nests in situations where they were within the reach of one's hand, and where they might have been destroyed in an instant. I have observed them under a door-way, the eaves of a low cottage, against the wall of a tool-shed, on the knocker of a door, and the rafter of a much-frequented hay-loft.

Dr. Richardson, in his American Fauna, mentions "that on the 25th of June, 1825, a number of cliff swallows (*Hirundo lunifrons*) made their first appearance at Fort Chewyan, and built their nests under the eaves of the dwelling-house, about six feet above a balcony that extends the whole length of the building, and is a frequented promenade. They had thus to graze the heads of the passengers on entering their nests, and were, moreover, exposed to the curiosity and depredations of the children, to whom they were novelties; yet they preferred the dwelling-house to the more lofty eaves of the storehouses, and in the following season returned with augmented numbers to the same spot." Until this year their clustered nests had been only found on the faces of the rocky cliffs.

A swallow will build its nest against a pane of glass, where it appears to stick very firmly, although it has no other support. The bird must, I think, make use of some unusually glutinous matter in order to make the nest adhere to the glass; I mean something different from what it would have used had the nest been built against a wall.

I observe that the chimney-swallow begins to twitter or sing almost on its first arrival. This leads me to think that the male birds arrive first, and the females probably some time afterwards. This is the case with many of our small migratory singing-birds, the males arrive first, and singing with great earnestness to collect the females around them.

There is scarcely a village in England in which an assemblage of some four or five hundred swallows may not be seen early in September, either on the church or some other large building. These, in their flights, meet with other assemblages, and join them, and this may account for the vast collections of these birds on the aytes of the river Thames. When seen on a building, they open their wings to admit the warmth of the sun, and preen their feathers, appearing joyous and

happy. It is a pretty sight, but it reminds us that winter is approaching.

It is extraordinary that so many persons, both in ancient and modern times, should so pertinaciously have entertained the idea that swallows either pass the winter at the bottom of some deep lake or river, or else hide themselves in cliffs and caverns:—

"Cum glaciantur aquæ, scopulis se condit hirundo, Verberat egelidos garrula vere lacus."

The idea of swallows hiding themselves in caverns is stated as a fact by a French writer:—

"Entre la ville de Caen et la mer, le long de la rivière d'Orne, nous avons beaucoup de cavernes, où l'on a quelquefois trouvé, pendant l'hiver, des pelotons d'hirondelles à la voûte, en forme de grappes."

It is needless for me to add that both these theories are totally groundless.

In mild seasons swallows have since been seen in the neighbourhood of the Thames as late as November, and induced by the peculiar mildness of the season they have attempted to rear a late brood. When, however, the setting in of cold nights, or a want of food, has warned them to depart, instead of leaving their young to starve in the nest, they have been seen, with the assistance of other swallows, to eject them from the nest, in order that they might meet a more speedy death on the ground. Wasps are known to do the same thing when they can no longer procure food to feed the young brood.

It is still a question whether, when the swallow leaves us in the autumn, it breeds again in those mild climates to which it resorts, or whether it merely passes its time in search of food.

"WHERE THERE'S A WILL THERE'S A WAY."

BY ELIZA COOK.

WE have faith in old proverbs full surely,
For wisdom has traced what they tell,
And Truth may be drawn up as purely
From them, as it may from a "well."

Let us question the thinkers and doers,
And hear what they honestly say,
And you'll find they believe like bold woo-
ers,

In "Where there's a will there's a way."

The hills have been high for man's mount-
ing,

The woods have been dense for his axe,
The stars have been thick for his counting,

The sands have been wide for his tracks,
The sea has been deep for his driving,

The poles have been broad for his sway,
But bravely he's proved in his striving,

That "Where there's a will there's a way."

Have ye vices that ask a destroyer?
Or passions that need your control?

Let Reason become your employer,
And your body be ruled by your soul.

Fight on, though ye bleed at the trial,
Resist with all strength that ye may,
Ye may conquer Sin's host by denial,
For "Where there's a will there's a way."

Have ye poverty's pinching to cope with?
Does suffering weigh down your might?
Only call up a spirit to hope with,
And dawn may come out of the night.
Oh! much may be done by defying
The ghosts of Despair and Dismay,
And much may be gained by relying,
On "Where there's a will there's a way."

Should ye see afar off that worth winning,
Set out on a journey with trust;
And ne'er heed though your path at begin-
ning

Should be among brambles and dust.
Though it is but by footsteps ye do it,
And hardships may hinder and stay,
Keep a heart, and be sure you'll get through
it,

For "Where there's a will there's a way."

I HAD A RARE AND TENDER PLANT.

BY EMILY VARDELL.

I HAD a rare and tender plant
That in my garden grew;
I thought I watch'd its every want,
But ah! it never blew!
'Twas not for lack of care it pined,
With tend'rest love caress;
For long I know it well divined
Of all—I loved it best.

I saw it fading day by day,
A snow-wreath in the sun,
For so it seem'd to go away,
My own beloved one!
My garden is all lone and bare
A wild blast swept it o'er:
The flower that should have blossom'd there
Is now, alas! no more!

INSTINCT OF ANIMALS.

THE movements, or motions, of some birds are very peculiar—those of the wag-tail, redstart, and starling, for instance. The cock-robin has a very “gallant bearing,” and shows much courage. The hedge-sparrow is very timid and peaceable. The wren is *fidgetty* and constantly on the move. The goldfinch always appears to be in a state of restlessness. The blackbird and song-thrush show much attachment to their mates. The latter sometimes takes a rapid run on my lawn, and then stops and seems to consider what she should do next, holding her head a little on one side. The sparrow has a bold familiarity which destroys the interest we might otherwise feel for him. I have observed that the young ones which have been reared amidst the smoke of London, will hop about the streets before they can well fly, collecting crumbs of bread, or other food, and appearing to have imbibed so early that boldness, and carelessness of danger, which is so conspicuous to any one who has watched the character of these Londoners. I am always amused in looking at the apparent recklessness of this bird, and then seeing how it secures itself from harm at the precise moment in which it is necessary to do so. Few things indeed can show more forcibly the powerful instinct which is implanted in animals for their self-preservation, than the means which they take to avoid danger.* I saw an instance of this lately in a stag. It had been turned out before a pack of hounds, and when somewhat pressed by them, I observed it twice to go amongst a flock of sheep, and in both cases to double back, evidently, I should imagine, with the intention of baffling the pursuit of the dogs. It would thus seem that the animal was aware of its being followed by the scent, and not by sight. If this be the case, it affords another proof that animals are possessed of something more than common instinct.

In riding over the Brighton Downs, I dis-

turbed one of the horned owls. The sun was shining brightly, which probably caused the bird to alight again at a short distance from me. On going up to it, it cowered or rather squatted, like a hare in its seat, but always turned its eye towards me whichever way I moved. I disturbed it several times, and remarked that the bird not only made itself as flat as possible, but alighted on those places which assimilated most to its own colour. Both salmon and trout, when they are hooked, will frequently throw themselves out of the water and endeavour, by falling upon the line with their whole weight, to break it. I have also been assured that when rats have been caught by the foot or leg in a trap, they will sometimes, in order to disengage themselves, gnaw off the limb. A gentleman who resides near Southampton had a retriever, a large half-bred Newfoundland dog, who had formed a friendship with a horse, which, at the time I am referring to, was turned out into a paddock near the house. The dog, hunting one day by himself, was caught in a snare by the leg, and after struggling some time, during which its cries were heard, he disengaged himself so far from his confinement as to break the string of the snare, the wire being still attached to the limb. In this situation he was observed, by my friend and his host, to go to the horse in the paddock, and seemed at once to make him aware of his distress. The horse gently put his nose down to the dog, and the dog having licked it, lifted up the leg to which the snare was attached in a manner which could not be mistaken. The horse immediately began to try to disengage the snare by applying his teeth to it in a gentle and cautious manner, although he was unable to succeed in removing it. This is by no means a solitary instance of the sympathy which animals show for each other when in distress.

DISTANCE OF THE STARS.

LIGHT is the swiftest moving body with which we are acquainted; it flies from the sun to the earth, a distance of ninety-five millions of miles, in about eight minutes, or at the rate of 192,000 miles every moment of time; yet light, incomprehensively swift as its motion is, would require ten years and

114 days to fly across this mighty interval; so that if the star 61 *Cygni* were supposed to be only just now launched into existence, it would be more than ten years before its light could reach the distant globe on which we dwell, so as to appear like a small star twinkling in our sky. Suppose a cannon ball to move 500 miles every hour without intermission, it would require fourteen millions, two hundred and fifty-five thousand, four hundred and eighteen years before it could move across the same interval.

* I have heard it stated, but I know not how truly, that when the corn is ripe, all the London sparrows migrate into the country. Large flocks of them are certainly seen in the neighbourhood of the metropolis in the Autumn.

INHABITANTS OF OTHER WORLDS.

THE inhabitants of the planets are not *purely spiritual* beings; for pure spirits, entirely divested of material vehicles, cannot be supposed to have a permanent connection with any material world or system; nor could they be supposed to be affected by air, light, colours, attraction, or other material influences, which operate on the surfaces of all the planetary bodies. If pure intelligences, disconnected with matter, exist in the universe, they must be conceived to have a more expansive range than the limits of any one globe, and those material agencies which affect the organs of sensitive existence cannot be supposed to operate upon them; and, consequently, their modes of perception must be altogether different from those of organized intelligences. We may therefore with certainty conclude that the intelligent beings connected with the planetary worlds, either of our own or of other systems, are furnished with *bodies*, or corporeal vehicles of some kind or other. These may differ in size and form in different planets; perhaps their size may depend on the amplitude of space which the different planets may contain.

But I cannot acquiesce in a supposition lately thrown out by a certain reviewer, that "in some worlds the inhabitants may be as large as mountains, and in others as small as emmets." In the one case, comparatively few inhabitants could live in a world where every one was a walking Mount Blanc or Mount Etna; and it would be contrary to all the known arrangements of the Creator, who appears to act on the principle of compressing into a small space the greatest degree of sensitive and intellectual enjoyment. Besides, such a huge mass of matter as a mountain is not only unnecessary, but in all probability would be highly injurious to the exercise of the intellectual faculties. In the other case, were rational beings as small as emmets, they could neither contemplate the beauties and sublimities of the scene of nature around them, nor the glories of the starry firmament; their range of vision could extend only a few feet or yards around them, and they never could be able to explore the nature, extent, and peculiarities of scenery of the world they inhabited. So that all such suppositions are evidently extravagant and absurd, being directly contrary to the proportion and harmony which exist in the universe, and which characterize all the arrangements of the Creator.

In regard to the powers of locomotion,

there may be considerable differences in different worlds. In many instances there is reason to believe their inhabitants are enabled to transport themselves from one region to another with a velocity far surpassing the locomotive powers of man. In the planet Venus some of the mountains are reckoned to be twenty-two miles in perpendicular elevation, from the top of which eminences the most sublime and diversified prospects must be enjoyed; and in order that its inhabitants may be enabled to ascend with ease such lofty elevations, it is not unreasonable to believe that they are endowed with powers of motion far superior to those of the inhabitants of our globe.

The inhabitants of the planets are furnished with organs of sensation, particularly with the *organ of vision*. This may be certainly deduced from the fact, that there are connected with the planets arrangements for the equable *distribution of light*. The sun, the source of illumination, is placed in the centre of the system, for diffusing light in certain proportions over the surfaces of all the planets, their satellites, and their rings. Each planetary body revolves round its axis, in order that every part of its surface may alternately enjoy the benefit of the solar radiation. Around the larger planets are moons for the distribution of light in the absence of the sun; and one of them is invested with a splendid double ring, which reflects the solar rays during night both on the surface of the planet itself and on the surfaces of its moons. This diversified apparatus for the diffusion of light evidently appears to be an arrangement of *means* in order to the accomplishment of an important *end*; for it would be a reflection on the character of the All-wise Contriver to suppose that means have been arranged where no appropriate end is intended to be accomplished; but all the arrangements for the regular and equable diffusion of light have been made in vain, if there be no *eyes* or organs of vision on which light may act; for mountains, and vales, and barren deserts do not require its regular influence.

That there are beings furnished with visual organs throughout all the worlds and systems of matter in the universe appears from the consideration, that not only in our own system, but among the myriads of fixed stars dispersed throughout immensity, provision is made for such organs in the existence of *light*, which is a substance that appears to be universally diffused throughout creation.—*Dick*.

HOW LONG BEES LIVE.

THE natural length of a queen's life has never been ascertained, but some have been known to live four or five years. The drone, "the lazy yawning drone," only lives as many months. Hatched in April, they are generally cast out of the hive by the other bees, to starve, about June or July; I have even known the workers drag the half-formed drones from their cells, and carry them out to perish. The ancient Greeks had an ingenious method of excluding drones from the hives. "It was observed that these gentlemen, (the drones,) though in no way inclined to work, would yet occasionally, on very fine days, go abroad for exercise, rushing forth in squadrons, mounting aloft into the air, and there wheeling and sporting and manœuvring in the sun. Taking advantage of their absence, they spread a fine net over the hive-entrance, the meshes of which, large enough to admit the bee would exclude the drone." This would not be a bad plan for the English bee-master to adopt; but he should wait till the bees themselves have begun to drive out the drones; for surely they alone can judge of the proper time for this harsh measure.* The drone doubtless serves an important purpose, although we must acquiesce in the amusing description of old Butler, who says, "He is a gross stingless bee, that spendeth his time in gluttony and idleness. For how-

ever he brave it with his round velvet cap, his side gown, his full paunch, and his loud voice, yet he is but an idle companion, living by the sweat of others' brows. He worketh not at all, either at home or abroad, and yet spendeth as much as two labourers; you shall never find his maw without a good drop of the purest nectar. In the heat of the day he flieth abroad, aloft, and about, and that with no small noise, as though he would do some great act; but it is only for pleasure and to get him a stomach; and then returns he presently to his cheer." The life of the common bee is busy and short. Those which are hatched in the spring of one year die before the close of the next, generally about August or September. They die, weakened by old age, worn out with toil, or suddenly destroyed by one of a thousand accidents; snapped up by a tomtit, interrupted in mid-flight by a swallow, dashed headlong into a pond by the boisterous wind, trampled on by a child, crushed by the foot of a cow while sucking honey from white clover or wild thyme, overpowered by a hornet, wounded in mortal combat by a wasp, caught in a treacherous spider's web, swallowed by a cold and bloated toad while resting on the ground, burnt or neglected by their owners, or killed in fierce battle with the robbers of a neighbouring hive.—*An Essex Man.*

THE HOUSE LOVE-HAUNTED.

BY THOMAS MACKELLAR.

GIVE me a house that's haunted,
With Love the only sprite;
I'll dwell in it undaunted,
Nor fear it's utmost spite.
Though witching tones are swelling
Above me and beside,
Where Love is in the dwelling
I am content to bide.
If every beam and rafter
And every stone and tile
Re-echo with its laughter,
My heart shall laugh the while.
The favoured room or chamber
Frequented by the ghost,
I'll oftenest remember,
And I will prize it most.

When morn is stilly breaking
And earth is growing light,
I'll tremble not if, waking,
Mine eyes behold the sprite.
If, as the day grows older,
The heavenly-temper'd thing
Taps tenderly my shoulder,
Rejoicingly I'll sing.
When in the midnight lonely
Day's brighter scenes are hid,
I'll sweetly sleep if only
Love stirs the coverlid.
I'd ever be enchanted
By Love's bewitching spell,
And in a house love-haunted
I would my life-long dwell.
And when my time is ending,
And heaven is coming nigh,
Let Love, my soul attending,
Go with me to the sky.

* Well would it be if drones in the human hive, of which there are too many lounging about, could be served in the same way.—*Ed. P. L. & A.*

The Plough, the Loom, and the Anvil.

VOL. II.

DECEMBER, 1849.

No. V

THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

IN the following letters, which cannot fail to command the attention of all impartial inquirers, the reader will recognise the perspicuous and comprehensive views of the writer to whom we have been so frequently and so much indebted for the able disquisitions that have enriched our pages, on the same subject. It is easy to prejudge and denounce, but quite another thing to study and to answer, such reasoning. All we ask is that the farmer and planter enter on the perusal of these letters with an eye solely to the *discovery of the truth*; divested of all party bias, and regardless of all party objects. In that spirit, if we know ourselves, is this journal strictly conducted.

DEAR SIR:—I would gladly furnish replies to the questions contained in your circular of August last, did I possess any information on the subject of my own knowledge, but I do not. Although generally informed as to the working of the ad valorem system established by the tariff of 1846, my knowledge has been derived from others, from whom you will receive it; and it would therefore be useless to trespass upon your time with any thing that I could say on the subject. To the general working of the several revenue systems since the peace of 1815, I have, however, given some attention, having been very desirous to satisfy myself as to the effects of the protective and free-trade systems in the remuneration of the labourer; and as that is the great question now to be settled, the results of my inquiries may be useful to you.

Of the advantage of perfect freedom of trade, theoretically considered, there could be no doubt. The benefit derived from such freedom in the intercourse of the several States, was obvious to all; and it would certainly seem that the same system so extended as to include the commerce with the various states and kingdoms of the world could not fail to be attended with similar results. Nevertheless, every attempt at so doing had failed. The low duties on most articles of merchandise in the period between 1816 and 1827, had produced a state of things which induced the establishment of the first really protective tariff, that of 1828. The approach to almost perfect freedom of trade in 1840, produced a political revolution, and a similar but more moderate measure, led to the revolution of last year. These were curious facts, and such as were deserving of careful examination.

It may be assumed as an universal truth, that every step made in the right direction will be attended with results so beneficial as to pave the way for further steps in the same direction, and that every one made in the wrong direction will be attended with disadvantageous results tending to produce a necessity for a retrograde movement. The compromise bill, in its final stages, was a near approach to perfect freedom of trade, the highest duty being only 20 per cent. Believing it to be a step in the right direction, one of the enthusiastic advocates of perfect freedom of trade proposed, soon after its passage, that, commencing with 1842, there should be a further reduction of one per cent. per annum for twenty years, at the end of which time all necessity for custom-houses would have disappeared. With the gradual operation of the earlier stages of that bill there was, however, produced a state of depression so extraordinary as to lead to a political change before reaching its final stages;

and the duties had scarcely touched the point of 20 per cent. before they were raised to 30, 50, 60, or more, by the passage of the tariff of 1842. With the election of 1844, the friends of free trade were restored to power, and two years afterwards was passed the tariff of 1846—the free-trade measure—in which the revenue duty on articles to be protected was fixed at *thirty* per cent. Here was a retrograde movement. Instead of passing from twenty downwards, we went up to thirty, and thus was furnished an admission that so near an approach to free trade with foreign nations as was to be found in twenty per cent. duties had not answered in practice. Since then, it has been admitted, even by the most decided free-trade advocates, that on certain commodities even thirty per cent. was too low, and within six months from the date of the passage of the act of 1846, its author proposed to increase a variety of articles to thirty-five and forty per cent.* Here was another retrograde movement. It is now admitted that there are other articles the duties on which require to be raised, and daily experience goes to prove that such must be the case, or we must abandon some of the most important branches of industry. The tendency is, therefore, altogether backward. Thirty per cent. duty is now regarded as almost perfect freedom of trade, and instead of proposing a further annual reduction, each year produces a stronger disposition for a considerable increase. In all this, it is impossible to avoid seeing that there is great error somewhere, and almost equally impossible to avoid feeling a desire to understand why it is that the approaches towards freedom of trade with foreign nations have so frequently failed, and why it is that every strictly revenue tariff is higher than that which preceded it.

With a view to satisfy myself in regard thereto, I have recently made the examination, before referred to, of our commercial policy during the last twenty-eight years, commencing with 1821, being the earliest in relation to which detailed statements have been published. Before commencing to lay before you the results obtained, it may be well to say a few words as to the merits claimed by the two parties for their respective systems.

The one party insists that protection is “a war upon labour and capital,” and that by compelling the application of both to pursuits that would otherwise be unproductive, the amount of necessities, comforts, and conveniences of life obtainable by the labourer is diminished. The other insists that by protecting the labourer from competition with the ill-fed and worse-clothed workmen of Europe, the reward of labour will be increased. Each has thus his theory, and each is accustomed to furnish facts to prove its truth, and both can do so while limiting themselves to short periods of time, taking at some times years of small crops, and at others those of large ones, and thus it is that the inquirer after truth is embarrassed.† No one has yet, to my knowledge, ever undertaken to examine all the facts during any long period of time, with a view to show what have been, under the various systems, the powers of the labourer to command the necessities and comforts of life. One or other of the systems is true, and that is true under which labour is most largely rewarded: that under which the labourer is enabled to consume most largely of food, fuel, clothing, and all other of those good things for the attainment of which men are willing to labour. If, then, we can ascertain the power of consumption at various periods, and the result be to show that it has invariably increased under one course of action, and as invariably diminished under another, it will be equivalent to a demonstration of the

* Treasury Report, Feb. 1, 1847.

† A person employed in the preparation of government statistics inquired, on being asked to prepare some tables, what was to be the policy to be proved. “Why,” said the other, “could you prove both sides?” “Equally well,” said he.

truth of the one and the falsehood of the other. To accomplish this, has been the object of the inquiry in which I have recently been engaged.

It is necessary now to show what have been the distinguishing features of the several systems that have been in operation during the period to be examined. They are as follows:—

First. The tariff of 1816 was a planters' and farmers' measure. Cotton and coarse cotton cloths were carefully protected. Iron itself was well protected, but almost all manufactures of iron, the commodities for the production of which pig or bar iron could be used, were admitted at 20 per cent. Wool paid 15 per cent. Blankets and woollen and stuff goods paid 15 per cent., and finer goods 25 per cent., until 1819, after which they paid but 20 per cent. Spirits paid a heavy specific duty, for the benefit of the farmers; but paper, hats, caps, manufactures of leather, types, and manufactured articles generally, paid only from 20 to 30 per cent. Coal paid 5 cents per bushel, but the commodities in the manufacture of which coal was to be used paid ad valorem duties. Protection was thus given to the coarse commodities that least required it, and refused to those for the production of which the coarser ones were to be used. As a matter of course, its protective features were totally inoperative.

Second. That of 1824, under which iron was, as before, well protected, but manufactures of iron, and of metals generally, were admitted at 25 per cent. Wool was raised to 20 per cent., to increase, by successive stages, until it reached 30 per cent. Coarse woollens were fixed permanently at 25 per cent. Finer ones were to rise gradually until they reached 33½ per cent. Carpets paid from 20 to 50 cents per square yard. Hams paid 3, and butter 5 cents per pound. Potatoes 10, oats 10, and wheat 25 cents per bushel; while scythes, spades, shovels, and other things requisite for the raising of wheat and potatoes, paid 30 per cent. Spirits were carefully protected. Bolting cloths paid 15 per cent. Sail-duck, Osnaburghs, &c., 15 per cent. Cotton cloths paid 25 per cent., with a minimum of 30 cents per yard. The general features of this law did not vary materially from those of that of 1816, although protection was slightly increased.

Third. The first tariff thoroughly protective, and so intended to be, was that of 1828. It continued until 1832, when was passed the first of two laws by which the whole policy of the country was changed. This series constitutes stage the

Fourth. By the act of July 14, 1832, railroad iron was admitted free of duty. Axes, spades, &c., as before, 30 per cent. Bar and pig iron were carefully protected, but a large portion of the commodities for which they were needed were thus admitted without duty, or at the same rate as under our present free-trade tariff. Tea and coffee were free. Silks paid 10 per cent. Wool was protected, but worsted stuff goods were admitted at 10 per cent. Cotton goods paid 25 per cent., with minimums of 30 cents for plain and 35 for prints. This continued in force until the following March, when was passed the *Compromise Act*, under which linens, stuff goods, silks, and other articles were admitted free of duty, and one-tenth of the excess over 20 per cent. reduced from all other commodities, to take effect December, 1833, with a further similar reduction every two years until 1841, when one-half of the remaining surplus was to be reduced, and the other half in 1842, when no duty would exceed 20 per cent.

Fifth. The protective tariff of 1842, which was followed by

Sixth. The free trade tariff of 1846, now in existence.

We have thus had six different systems, but the first and second differ from each other so little that it is unnecessary to separate the years falling under them, whereas the early years of the *Compromise* differ so essentially

from the two latter that it is expedient to separate them. I shall therefore group the results as follows:—

First. The tariffs of 1816 and 1824, ending with 1829.

Second. That of 1828, commencing with October, 1829, and ending with the period at which the Compromise began to become operative, October, 1834.

Third. The Compromise, commencing with 1835 and ending with 1841.

Fourth. The years 1842 and 1843, the period immediately preceding and following the passage of the act of 1842, being that of the strictly revenue tariff of 20 per cent.

Fifth. The tariff of 1842, commencing June, 1843, and ending June, 1847.

Sixth. That of 1846, commencing June, 1847, and coming down to the present time.

It will be observed that I have placed the year 1829 in the first period, and 1834 in the second. It is not the passage of an act that produces change, but its practical operation, and the first year of the existence of a new system is but the sequel of that which is passing out. When protection is given to the makers of cloth and iron, mills and furnaces are not built in a day, nor are they abandoned as soon as protection is withdrawn. Had it been possible, I would have pursued the same precise system with every period, but it was not. The act of 1842 came into operation on the first of September of that year, and in the following one the time for making up the Treasury accounts was changed to June 30, and therefore only the first ten months that followed its going into effect could be included under the previous period. That of 1846 did not come into effect until December 1, and therefore but the first seven months that followed could be included in the system of 1842. The law of 1842 was in existence four years and a quarter, but I could give it only four years, which works materially to its disadvantage, and to the advantage of that of 1846.

In some cases even more than a year would be required to make an exact comparison of the working of the different systems. The immigration of one year is materially influenced, perhaps I might say determined, by the state of the labour-market of the previous year, and the change in that is at least a year subsequent to the passage of a law. Thus, if the tariff of 1842 tended to raise the compensation of the labourer, its effects would not become obvious until 1843, and it would not be until 1844 or even 1845, that an increase of immigration would take place. The price of labour was high in 1847–8, and we have a large amount of immigration in 1849. It is now falling, and the immigration of next year will probably be reduced.

So likewise is it with the supply of grain. A diminution in the demand for labour in mines and furnaces in 1842 tended to increase emigration to the West. For the first year, 1843, those emigrants were consumers only. In the second, 1844, they had grain to sell, and prices fell. In the present year, the demand for labour in mines and furnaces, and in the erection of mills and furnaces, is diminished, and emigration to the West is increased, yet the effect of this on the supply and price of food may not, and probably will not become obvious until 1851.

Your predecessor appears entirely to have overlooked this necessity for allowing time to permit new systems to develop themselves, and to affect the movements of the people. In his last report to Congress is given a comparative view of the receipts from customs in the last six months of the tariff of 1842, and the first six of that of 1846, by which it is shown that the one was twice as productive as the other, and yet very slight reflection would have sufficed to satisfy him that scarcely any portion of the difference

had resulted from the change of commercial policy indicated by the adoption of his tariff. The amount that could be imported and paid for was dependent on the state of affairs that had existed in the country during the previous year, and the passage of the law had scarcely even the slightest influence upon it. In the same way, the receipts from customs from September, 1842, to November, 1846, are compared with those of 1847 and 1848, when it is well known that in 1842, under the Compromise, the imports had fallen so low that the government was compelled to send to Europe to endeavour to effect a loan for its support even in a time of profound peace. If a cause has right on its side, such erroneous views cannot be required to be presented. In the tables that I shall now offer for consideration, I have pursued, as nearly as possible, a uniform course, commencing each period at the time at which the system might fairly be deemed to become operative, to wit: at the close of the fiscal year following the one in which the law was enacted. If error, then, exist at the commencement of the period, it will find its compensation at the close, and thus justice will be done to all.

There still remain two other points in regard to these tables, to which I have to ask your attention.

First. It is usual in almost all tables of import and export to exclude specie and bullion. This is wrong, and tends to produce error, and to prevent a proper understanding of the working of the system that may be under consideration. Gold and silver are commodities produced abroad, of which we consume large quantities, occasionally exporting the surplus; and there is no reason whatever why they should not be treated precisely as are coffee, wines, brandy, and other foreign commodities. When they are imported they come in exchange for our products, and the sum of merchandise and specie imported is the value of our exports. When exported, they go in lieu of our products, and should be treated as foreign merchandise re-exported. By deducting them from the value of the merchandise imported we obtain the value of our domestic exports.

Second. It is usual to affix to the commodities exported arbitrary prices, and thus to obtain their money value. These prices are fixed at the ports of shipment, and represent only what *we ask* for the commodities we have to sell, not what *we get* for them. They represent, too, the prices *minus* the earnings of the machinery employed in performing the work of transportation, which must then be guessed at. The consequence of all this is, that the tables published by the Treasury are totally worthless as guides to a proper understanding of the general course of trade. What is needed to obtain such an understanding is that the nation make out its accounts as it would do if it were a merchant, putting down not the price asked but the price received, and then balancing its books by ascertaining whether the year's business has increased or diminished its debts. The amount received for our exports constitutes their precise value, and to ascertain what is that amount we should take the value of merchandise imported, deducting therefrom any debt contracted, or adding thereto any debt paid off, during the year. Thus, if the imports be \$100,000,000, and the debt contracted by the transfer of stocks has been \$10,000,000, the amount paid for by our exports is only \$90,000,000. On the contrary, if we have paid off that amount of debt, it should be added, and we should thus obtain \$110,000,000 as the true value of the produce and merchandise exported. The freights are thus included.

To carry this fully into practice in the following tables would be impracticable, but it may be done in part. It is generally understood that the amount of American stocks, public and private, held in Europe in 1841 exceeded \$200,000,000, and there is reason to believe that they exceeded

by \$170,000,000 the amount held in November, 1834, when the great stock speculation commenced.* By deducting this sum from the merchandise imported between the close of 1834 and the year 1841, we shall obtain the value of produce and merchandise exported. A part of this debt was absorbed in the years 1845, 1846, and 1847, while on the other hand new debts were created last year, and are now being created by the transmission of evidences of debt. To the imports of the three first named should be added the debt absorbed, and from those of the last two years should be deducted the debt created, and we should then obtain the actual amount paid for by produce and domestic merchandise exported, and by the shipping employed in the work of transportation.

There are other and earlier years in which corrections might be required, but they are of trifling amount by comparison with those to which I have referred. In those years small loans were made, but it is probable that nearly as much was paid off, except perhaps in 1825, in which a considerable amount of European debt was created. The amount, however, is so uncertain that I have not thought it worth while to make any correction therefor; although to do so might, and perhaps would, produce a sensible diminution in the value received for our produce exported prior to 1829, which would thereby be placed in a somewhat worse position than that in which I have represented it.

With these remarks, I will now proceed to lay before you the results of my inquiries. In doing so, I will give every fact that appears to me likely to throw light on this important question, concealing nothing. If, then, those who have arrived at conclusions different from mine, and are in possession of other facts, will put them together as I now do, we may by degrees arrive at the truth. It is the great question for the nation, and it is time that it should be examined as a purely scientific, and not as a party or sectional one.

LETTER SECOND.

The average population of the Union in the several periods referred to, is thus estimated in the last Treasury Report:†

First. For the years from that ending Dec. 31, 1821, to that of

Dec. 31, 1829	11,247,000
Second. From Sept. 1829, to Sept. 1834†	13,698,000
Third. From Sept. 1834, to Sept. 1841	16,226,000
Fourth. From Sept. 1841, to June, 1843	18,296,000
Fifth. From June, 1843, to June, 1847†	19,771,000
Sixth. From June, 1847, to June, 1848	21,000,000
Seventh. From June, 1848, to June, 1849	21,700,000

* Report of Select Committee on Banks of Issue: Evidence of Mr. I. Horsley Palmer, page 106.

† Page 68.

‡ As these years are frequently referred to separately, I give their population, on the same authority:—

1830-'31	12,856,165	1843-'44	19,034,332
1831-'32	13,377,415	1844-'45	19,525,749
1832-'33	13,698,665	1845-'46	20,017,165
1833-'34	14,119,915	1846-'47	20,508,582
1834-'35	14,541,165	1847-'48	21,000,000

The amount of foreign merchandise, specie included,* consumed in these several periods, has been as follows:—

	Total.	Annual Average.	Pr. head.
1821 to 1829	\$508,000,000	56,400,000	\$5.00
1830	55,500,000		4.32
1831	81,000,000		6.10
1832	75,500,000		5.51
1833	88,000,000		6.20
1834	103,000,000		7.08
1835 to 1841	854,000,000		
Deduct debt incurred	170,000,000	684,000,000	97,700,000
1842 to 1843 (21 months, ending June 30,)	145,000,000	82,000,000	4.48
1843-'44	96,000,000		5.03
1844-'45	101,000,000		5.16
1845-'46	110,000,000		
Add debt and back interest paid	5,000,000	115,000,000	5.75
1846-'47	138,000,000		
Do.	5,000,000	143,000,000	7
1847-'48	118,000,000		
Deduct debt incurred	8,000,000	110,000,000	5.25
1848-'49	†		
Do.	22,000,000		

The facts derivable from an examination of the above accounts are as follows:—

First. That the amount received from foreign nations in exchange for our surplus products largely increased during the existence of the tariff of 1828.

Second. That the amount so received diminished greatly after the Compromise Bill began to become operative.

Third. That the amount so received from foreign nations was still further and largely diminished under the strictly revenue clauses of that bill, and that the tendency was downward when the system was changed.

Fourth. That the amount so received increased rapidly under the tariff of 1842, attaining nearly the same point that had been reached under the tariff of 1828, and that in both cases the tendency was still upwards when the system was changed.

Fifth. That the amount so received diminished in the year 1848.

Seventh. That the amount of debt incurred in the last two years must tend to produce a further diminution in future ones.

In establishing the scale of value of our exports, including the earnings of shipping, the following is the order to be pursued:—

First, and lowest. The strictly revenue clauses of the Compromise Act.

*The movement of specie in those periods was as follows:—

1821 to 1829, Excess export	\$9,000,000	Deducted from the merchandise imported.
1830 to 1834, Excess import	25,000,000	Added thereto.
1835 to 1841, " "	27,000,000	do.
1842 and 1843, " "	20,000,000	do.
1844 to 1847, " "	18,000,000	do.
1848, Excess export	9,000,000	Deducted.
1849.	.	do.

† I have not been able to obtain the quantity.

Second. The partially protective tariffs of 1816 and 1824.

Third. The Compromise Act.

Fourth. The tariff of 1828.

Fifth, and highest. The tariff of 1842.

Thus far, the tariff of 1846 stands below that of 1842, and the tendency is downward, but to what place in the scale it will descend can be determined only after it shall have been some years in operation.

Such are the money values of our exports, but the question now arises—What quantity of commodities could be obtained in those several periods for that money? That I will now give as regards cotton-cloth, and iron, as follows:—

By a table* of the prices of goods exported from England, from 1830 to 1844, it appears that the average cost of two pieces of cloth, of the same description, one printed and the other plain, was as follows:—

'30 to '34.	'35 to '41.	'42 and '43.	'44 to '47.
19/10	18/	14/11	16/6

And the exports of 100 men in those periods would pay for, pieces of each . . .

126	138	140	145
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It would thus appear that if the whole amount of our exports had been returned in cotton cloth, we should have received ten per cent. more in the period from 1835 to 1841 than in that from 1830 to 1834; eleven per cent. more in 1842 and 1843; and fourteen per cent. more in the period from 1844 to 1847. It is to be observed that during all this time there has been a constant diminution in the quantity of labour required for the conversion of wool into cloth, more than sufficient to account for the difference, and the important fact to be observed is, that the power to purchase foreign cloth does not increase in any proportion to the diminished price of cotton, so large a portion of the expenses after leaving the plantation tending to increase with the increased supply. Let us now look to iron.

The average price of iron in England was as follows:—†

'21-'22.	'30-'34	'35-'41	'42-'43	'44-'47
\$41.76	28.80	41.00	24.84	39.64

The exports of 100 persons would therefore purchase, tons

11.4	20.3	14.6	14	14.5
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Had the whole exports of the country been returned in iron, the quantity received in the period from 1830 to 1834 would have been almost double that received under the tariffs of 1816 and 1824, and exceeding by almost one-half that received in the period from 1835 to 1841, and that received in the years 1842 and 1843. We see also that notwithstanding the great railroad speculation of England, in the years from 1844 to 1847, the quantity that would have been received in that period would have been as great as at any other except the years of the tariff of 1828. It would thus appear that the value in iron of our surplus products exported was much greater in the longest period of protection than in any of the three periods of freer trade. What will be the average under the tariff of 1846 must be ascertained at a future time.

In my next I will proceed to examine the power of production and consumption in these several periods.

I am yours, very respectfully,

HENRY C. CAREY.

Hon. WM. M. MEREDITH, *Secretary of the Treasury.*

* Merchants' Magazine, Vol. IX. page 277.

† Ibid. Vol. XX. p. 337.

HOW THE "FREE-TRADE" SYSTEM WORKS WITH THE BRITISH FARMER.

A LATE writer in an English agricultural journal says to the editor, as below. Let the American farmer judge what his chance will be to contend in the great grain markets against the Odessa wheat grown by the serfs of Russia to feed the makers of English iron, to make our great railroad running through the iron mines and the coal mines of Alleghany:—

"The position of the foreign agriculturist, and the advantages he has over the English are pretty clearly shown in a letter from Mr. Thomas Brown on 'continental farming,' which you will find in the very next page of the same 'Gazette' that your article is published in. He therein states how much superior were the soil and climate, as well as the comparative freedom from the burden of taxes those countries through which he travelled were; but the English farmer has not so much cause to fear the competition of Belgium or France as from the more northern Continent of Europe—from Russia, Poland, Denmark, Sweden, &c., countries where corn can be grown at about half the cost it can be in Great Britain, and can be imported into our markets from theirs at such a price that must put it out of the possibility of our farmers competing with them. I have it from good authority, that Russian wheat can be laid down at Odessa for 18s. [\$4·50 for 560 pounds, or more than nine bushels] the quarter, and when the freight is added to this, it can be imported into this country at from 24s. to 26s. the quarter, [\$6 to \$6·50 for 560 pounds, or more than nine bushels]. What chance then has the British farmer, as the gentleman whom you met on the railway returning from the Norwich meeting very fitly asked, what chance has he to compete with the foreigner? It is a question that can have but one answer. No, it is not the additional produce that he might possibly obtain by greater attention to the manure-heap, or the dung-water tank, or the quantity of grain that he might save from destruction by rats, that will enable him to stand upon an equal footing with his rival; he will need some stronger helps than these, to put him on a par with his antagonist; and unless those aids are rendered him, he must fight the losing game until he be forced to 'shut up,' as hundreds upon hundreds will do before that system will be overturned which shall have brought them to ruin. But that ultimately it will be upset, I have not a doubt, for it will bring its own destruction with it; but before that happens what a dreary aspect does the British farmer perceive to present and future prospects."

Drainage of Lands.—On this subject a pamphlet has been written in England lately, of which Dr. Lindley says:—

"This very interesting pamphlet contains the substance of a paper, on model and relief mapping as the best index to the capabilities of a surface, which was read before the Society of Arts during the past session. The main point on which Mr. Denton insists, in that part of his performance which relates to drainage, is the value of drainage waters as a motive power. The quantity of rain falling on the land is estimated at 30 inches per annum over England generally; and deducting 18 of them as absorbed by vegetation, and evaporated again into the air, 12 inches remain, which trickle downwards through the soil, and find their way from the land by springs—to the sea by rivers. An inch of water over the surface of an acre of land weighs 100 tons; 1200 tons fall annually on every acre in the island, and thence descend to the sea. What an enormous force is here wasted, which might be made available to displace the expensive steam power employed in mills, or the far more expensive animal power employed on farms."

LIVE AND CARCASS WEIGHT OF PIGS.

I HAVE usually sold the whole of my pigs by weight alive; but this season, being unable to do so, and the question having been frequently put to me—What proportion does the carcass bear to the live weight? I have sent you the live and dead weights of those I have sold this winter, fed chiefly on carrots boiled, a small portion of barley-meal and linseed being mixed with them. I am feeding on mangold-wurtzel, (boiled,) the carrots being nearly exhausted. [A score is 20 pounds.]

LIVE AND DEAD WEIGHTS OF SOME FATTING PIGS SOLD FROM MARTIN'S FARM, 1849.

Live Weights.			Dead Weights.		Live Weights.			Dead Weights.	
Cwt.	qrs.	lbs.	Scores.	lbs.	Cwt.	qrs.	lbs.	Scores.	lbs.
1	3	15	.	7	11	2	1	10	
1	3	7	.	7	3	2	1	2	29
1	3	15	.	7	7	2	1	8	3
2	1	0	.	8	19	2	3	10	12
2	0	0	.	8	2	2	3	2	11
1	3	19	.	7	19	1	2	25	8
1	3	9	.	7	0	2	0	2	7
1	3	10	: Four	10	10	2	2	10	
2	0	19	.	8	10	2	2	18	32
2	2	0	.	10	9	2	1	21	0
2	1	17	.	9	10	2	1	14	10
2	0	0	.	8	2	2	2	13	
2	0	22	.	8	14	2	1	22	31
2	2	3	.	11	0	2	2	13	4
2	3	1	.	12	1	2	0	21	7
2	0	7	.	8	17	3	0	5	9
1	3	3	.	7	12	3	0	18	26
1	2	3	.	6	6	3	2	6	15
1	3	19	.	8	15	2	1	21	
2	1	15	.	11	13	2	2	18	40
2	1	11	.	11	2	2	1	20	16
2	1	14	.	10	13	2	2	4	

M. SANDFORD.

"BOX-FEEDING" FOR CATTLE.

THERE is always something to keep up agitation in the agricultural world: indeed his mind must be naturally inclined to a stupid condition who cannot find in the round of agricultural inquiry something to keep it always awake. One of the questions now in England is to *box-feed* or not to box-feed.

Box-feeding.—The evidence given in "The Agricultural Gazette," on the subject of box-feeding has been, with one or two exceptions, entirely in favour of that system; but still the statements made and reiterated by Mr. Wilkins against it are so decided and so emphatic that many persons may be led to imagine that he has good grounds for the strong assertion he makes of the practice being unhealthy, because the cattle are always wet, cold, and dirty. It occurred to me that I could very easily test this fact by putting an animal into a loose horse-box that was empty and detached from my stable, and keeping it there for a sufficient length of time. Accordingly, I had it littered down, and turned into it a milch cow. The floor of this loose box was flagged and slightly sloped towards the door. I gave orders that no dung should be removed, but fresh litter should be lightly spread over the dung as often as necessary. In this state the cow was kept for three months before the manure was removed. Now then for the result. The

floor being flagged and sloped, the urine might have been expected to percolate through the litter to a certain extent ; but it did not do so, the litter soaked it all up, there was no bad smell, the cow was always clean and dry, gave an abundance of milk, and from the sleekness of her coat gave indubitable signs of good health. This experiment has completely satisfied me that a box on a dry foundation (even when sunk two feet below the surrounding ground) must not be wet, dirty, cold, or uncomfortable, and that it is a system well calculated to improve the condition of cattle by keeping them warm, dry, and clean. All that is necessary, beyond a dry box, is attention on the part of the attendant in the supply of litter ; and as there is always a man kept to look after and feed cattle put up to fatten, it is no extra expense giving an extra supply of straw, as the quality and quantity of manure made by this system amply repays the value of the straw. I have not touched upon the question of compounds for feeding, as that is a separate subject.—*W. Hodgson.*

STIRRING LAND IN TIME OF DROUGHT.

MANY would think this operation in time of drought would aggravate the evil. On the contrary, the scientific and experienced Editor of "The London Agricultural Gazette" says :—

Experience has proved that stirring the soil, so as to insure a loose surface, is highly beneficial to growing crops. Air is thereby enabled to act more perfectly upon the substances from which plants derive their nourishment ; and, in dry weather, the escape of moisture is prevented. In fact, loose soil acts as a mulching. Where the surface is compact, it will have been observed that the sun's rays dry the ground to a greater depth than they do where it is loose. When the particles of the soil are in close contact, the uppermost, parched by the heat of the sun, draw humidity from those immediately under them ; and these again from others still lower. On the contrary, when the surface is loose and well pulverized, it may lose its moisture rapidly and become very dry ; yet, from imperfect cohesion with the inferior portion, the latter cannot readily communicate its moisture. In short, the loose soil at the top becomes an interposing medium which protects the under stratum from the drying effects of the sun's rays.

It is not only in dry weather that a compact surface is prejudicial to crops, in general it proves very injurious when rain comes. All the rain which falls in most summers is fully required for the growth of crops, provided the ground is deeply drained and trenched as it ought to be. Some wet districts, of course, will form exceptions. If a great portion of the rain which falls on a given piece of ground is allowed to run off by the surface, as is too often the case when the latter is not kept loose, then the crops must suffer from the want of moisture, unless the expense of artificial watering is incurred ; but even this supplied in equal quantity has not the genial quality which rain-water possesses for promoting vegetation.

Phosphate of Lime.—It is never made : our natural supplies are abundant in bones, which are half phosphate of lime, and in coprolites, which give from one-third to two-thirds phosphate of lime. The biphosphate is made from the phosphate by adding one-third their weight of sulphuric acid to bones, which are first well wetted, and, after the addition of the acid, suffered to lie in a heap for a week or two, and at length mixed with ashes and sown, 3 or 4 cwt. per acre, as a manure for turnips.—*English Paper.*

THE RAILROAD—PROSPECTS AHEAD.

[From the Staunton Spectator.]

THE engineers have been busily at work for some weeks past, running the various lines, with a view to the location of the railroad between Waynesborough and this place. The survey of one line has been completed, and, by it, the distance between the two points is twelve miles and three-eighths, the distance by the turnpike being precisely twelve. Should this route be established, the road will pass up the meadow between the Deaf and Dumb Institution and the Lunatic Asylum, and the depot will be on the south side of Lewis's creek, near the bridge on the Middlebrook road. Other routes, which are thought by some to be more advantageous, are yet to be examined.

When we look out upon the brilliant prospect ahead of us, we confess that we become a little exhilarated. With the McAdam road entering our town from Winchester, on the north; the fine turnpike, partly McAdamized, from the Ohio river, on the west; the plank or McAdam road from Lexington, on the south; and the plank road from Scottsville, and the railroad, on the east, we must become the centre of a thrifty trade, and the most flourishing inland town in the State. When these improvements are completed, the superior water-power of our county will be brought into exercise; every streamlet and mountain-rill which now wastes its force will be made to ply a mill or factory. Then our mineral wealth will be developed, and turned to profitable account. Then the farmer will cultivate his lands with tenfold diligence, and receive a reward in proportion, and then the very stones which now cumber the ground, converted into lime and sent off to fertilize the fields of less favoured regions, will prove to us valuable as mines of gold. [And all because, virtually, the consumer is drawn closer to the producer.—*Ed. P. L. & A.*]

ARTIFICIAL GYPSUM.

AT a recent meeting of the French Central Society of Agriculture, M. Moll spoke of the advantages arising from the employment of artificial gypsum in those cases in which the nature of the soil, or the crops to be obtained, indicated the application of this manure; but when the land to be manured was so situated that the natural gypsum could only be obtained at such a price as to render its employment not sufficiently remunerating. As there may be localities in England where a knowledge of the process of preparing this artificial gypsum would be of service, I send the following instructions. Take 1 cwt. of well slaked and sifted lime, and add to it $11\frac{1}{4}$ lbs. of sublimed sulphur in fine powder, and intimately mix them together. At the expiration of a few days the mixture, which was at first of a pale yellow colour, will appear white; oxygen having been absorbed, the sulphur converted into sulphuric acid, and a sulphate of lime or gypsum formed. This artificial gypsum will be found to contain a certain portion of carbonate of lime or common chalk, which has not been transformed into sulphate; but this, instead of being a disadvantage, is in reality of great benefit, as its admixture with the gypsum keeps the latter in a state of powder, and prevents its hardening. The mixture of sulphur and slaked lime must be slightly moistened, and every part by degrees exposed to the action of the air; but care must be taken not to add so much water as would make the mixture of a pasty consistence, otherwise the gypsum formed would harden, and require much labour to reduce it to the fine powder necessary for its employment as manure.—*E. H. Durden.*

NIGHT-SOIL:

NEGLECT AND WASTE OF IT IN TOWN AND COUNTRY.

PERCEIVING, as every one must have done, an increasing disposition to husband every other resource for fertilizing land, it has to us been for years a matter of surprise that *night-soil*, the richest of them all, should be so much neglected. In Holland, where the highest state of fertility and productiveness is to be seen, they sell it by the pound, and a farmer would as soon think of throwing away the money which he knows it to be worth, as to waste the substance itself. Particularly have we been surprised that no farmer in the neighbourhood of Washington—Mr. Stone, Mr. Riggs, Mr. Blair, or Mr. Rives, for instance—has made suitable provision for collecting the immense accumulations which might so easily be obtained from the great stercoraries of that city: nor is there, that we are aware of, any systematic plan for collecting and using the *night-soil* of Baltimore, where we happen to be writing, and other large cities.

The following, from the London "*Mark Lane Express*," is highly interesting and worthy of attention, not only from farmers, but from all who have in charge the government and health of our large towns. Doubtless some disinfecting agent might be found, with us, as economical and effectual as the Irish peat charcoal. Does it not present an object more *inviting* for the formation of a company in our large cities, than many other objects for which they have been gotten up? But our present purpose is merely to present and to register for future and for practical use, a most important discovery which may be turned to profitable account, by any one having some capital and a little enterprise, and at a loss for the employment of them. We do not remember to have seen on a single one of the many farms that have lately fallen under our view, any provision for the collection of the most efficient of all offals, while common sense tells every farmer that he should not lose, if he could help it, by any possible means at his command, the excrement or the feather of a goose or a pigeon. But the following is important, were it only to show how, by the use of common charcoal, so easily to be had, a very great and very common nuisance about private dwellings may be abated:—

IRISH PEAT CHARCOAL AND EXCRETORY MATTER.

On Monday night last a very unusual meeting of a highly interesting character took place at the Mechanics' Institute, Southampton Buildings. There were present an assemblage of above six hundred persons, composed of many of the leading medical and scientific characters of London, and several foreigners of distinction, who appeared to be much interested in the proceedings. Amongst those present we observed a number of the Poor-law Guardians of London and the Country; the Treasurer, Secretary, and several of the Members of the London Botanical Society; the Secretary of the King's College Hospital; Dr. Alfred King; Dr. Walker; Dr. Malan; several Members of the Sewers Commission; Professor Wildsmith; Professor Way; Captain Horne, (Life Guards); Sir Augustus Hillary, Bart.; O'Gorman Mahon, Esq.; Dr. Bird; General McLeod; General Briggs; Colonel McDonald; Wm. Shaw, Esq., Strand; Wm. S. Langbourne, Esq.; Wm. P. Andrew, Esq.; Dr. Ayres; Dr. Graham; Dr. Lancaster; Rev. R. I. Beadon; Rev. G. H. Stoddart; Paul Shordiche, Esq.; H. A. Harrison, Esq. (Commissioner of the Board of Exchequer); the Proprietor of the *Mining Journal*; Dr. Reid; Dr. Russel; several Civil Engineers; and many others of note: in fact, we have seldom attended a meeting composed of so many scientific men.

The meeting was held in consequence of "*a challenge*" given by this paper to Mr. JASPER ROGERS, C.E., who had proposed on several occasions, by letters, &c., published therein, to solve at the same time one of the great social and pecuniary difficulties of Ireland, and the great sanitary question now agitated in the metropolis. The primary object of the meeting was to test, by actual experiment, the valuable deodorizing properties of peat charcoal, when applied to and intermixed with *night-soil*, the matter of sewers

&c. ; and its peculiar character may be inferred from the fact that a chairman was selected hap-hazard from the body of the meeting ; that eight judges were chosen, according to "Crownor's 'quest law," *de circumstantibus*, all being perfect strangers to one another, and all ultimately concurred in bearing testimony to the value and importance of the experiments which they were called upon to witness, and by which the deleterious and appalling effects, in crowded cities, of decomposed animal and vegetable matter might be averted and made subservient to the reproduction of food for man.

The proceedings were opened by an address from Mr. WM. SHAW, who stated that he had been mainly instrumental in calling the meeting together. Having been formerly practically connected with agriculture, and latterly devoted to agricultural literature, and seeing how much had been done by their neighbours on the continent in the use of night-soil for the improvement of agriculture, his attention had been directed to that point, more especially to some means by which so valuable a manure as human excretiæ could be saved. In London it was not only entirely thrown away, but actually so disposed of as to poison and infect the air we breathed, although it was well known to be a most valuable fertilizer, but could not be dealt with on account of its offensiveness. Mr. Rogers having directed his attention to the subject of the deodorizing powers of peat charcoal, and frequently published statements in the *Mark Lane Express* upon the subject, which, *if not true*, would lead many astray, while, if true, would be productive of incalculable good to the agricultural interest as well as towns, he had *challenged Mr. Rogers to the proof*, because he felt that no doubt should be permitted to rest upon the subject. It was fact, or it was not ; and a question of such paramount importance should not be permitted to exist a moment if possible to be ascertained. Although some delay had taken place, he presumed, in making preparation, Mr. Rogers had accepted the challenge, and he (Mr. Shaw) was bound to say that in doing so, Mr. R. had offered to him, unasked, the privilege of naming the time and *place*, and *judges* of the test. In accordance therewith he had appointed the present to be the "*time and place* ;" and all that was necessary to *prove or disprove* the question was the appointment of *judges*. Now, he conceived the most straight-forward and honest way would be that the *chairman* and *judges* should be taken indiscriminately from the meeting. (Hear, hear.) "Let whoever is the centre man of the first row be chairman, (cheers,) and let the meeting send on the platform eight judges. (Hear, hear.) He begged to disclaim having private or personal interest in view—he wished the trial to be made in the most public manner, because it was a great public question ; let the meeting select its own chairman, and pronounce its opinion upon the result."

At the suggestion of Mr. Shaw, a gentleman was then called from the body of the meeting to act as chairman, and from a number who presented themselves on the platform for that purpose, eight were chosen to watch the proceedings, and act as judges. One part of night-soil, and two parts of peat charcoal were then passed through a mill of simple construction, in which they were thoroughly mixed, the result being a dry blackish powder, not unlike the peat charcoal in appearance, and giving out a faint ammoniacal smell, which almost instantly passed off, leaving the poudrette inodorous and capable of being handled and carried about without any inconvenience. There was a small loss in weight, the product something more than 17 lb. for 18 lb. put into the mill ; but the remainder appeared to be the quantity resting in the mill.

The operation having been repeated, the same results followed, and within a few minutes the whole quantity intermixed was carried off by the

audience, who came forward from all parts of the theatre to take it in *handfuls*. This fact was striking; a few minutes before, all *noses* were turned away from the tin buckets in which the night-soil was brought, (closely covered up;) a few minutes after, it was taken up in *handfuls*, put into slight paper bags, which Mr. Rogers had provided, (of course knowing the result to be attained,) which were carried off, “stowed away” possibly in the same pocket with the pocket-handkerchief, but which in fact could not be affected by it. The *material* was an object of such great demand that it was at length carefully collected from the floor, and *pocketed*.

Each bag exhibited the following amusing announcement, printed on either side :—

IRISH PEAT CHARCOAL
AND
ENGLISH EXCRETIÆ,
Intermixed in the presence of the Meeting at the
MECHANICS’ INSTITUTE, LONDON,
Held on the 1st October, 1849;
ACCORDING TO THE PATENTS OF
MR. JASPER W. ROGERS, C.E.,
IN ANSWER TO
THE CHALLENGE OF
“THE MARK-LANE EXPRESS.”

“NON OLET.”

COMPONENTS OF IRISH PEAT CHARCOAL AND ENGLISH EXCRETIÆ.

PEAT CHARCOAL.	EXCRETIÆ.
Carbon,	Phosphate of Ammonia,
Hydrogen,	Phosphate of Lime,
Nitrogen,	Phosphate of Magnesia
Oxygen,	Phosphate of Soda,
Sand and Clay,	Phosphate of Iron,
Oxide of Iron,	Chloride of Sodium and } Alkaline Sulphate, }
Phosphoric Acid,	Sulphate of Lime,
Silicate of Potash,	Sulphate of Soda,
Chloride of Sodium,	Sulphate of Potassa,
Carbonate of Lime,	Hydrochlorate of Ammonia,
Sulphate of Lime, &c.	Lactate of Ammonia,
	Free Lactic Acid,
	Urea,
	Uric Acid,
	Animal Matter,
	Mucus,
	Earthy Phosphates, &c.

Possessing as a whole, the power of absorbing, deodorizing, and retaining for the uses of vegetation, the components of Human Excretiæ.

Vide:

BERZILIUS,
BOUSINGAULT,
LIEBIG,
LYON PLAYFAIR,
CUTHBERT JOHNSON, &c.

“UNITY IS STRENGTH.”

The CHAIRMAN, after the experiments had concluded, called upon the judges to give their opinions *seriatim*, for the satisfaction of the meeting.

Dr. ALFRED KING said the results of the process appeared to him extremely satisfactory. The product had at first a slight ammoniacal smell, and no doubt some ammonia and other gases were given off. It had completely answered the object in view, and for his part he had been very much surprised and pleased at the result, and was of opinion that a most glorious discovery had been made. He was also highly impressed with the honest and straightforward conduct of Mr. Rogers in submitting the process to the investigation of perfect strangers. He had come forward as a judge with a very skeptical feeling; but that had been completely changed, and he had no doubt on his mind that the advantage to the public would be equal to the merit of the discovery. He again repeated, Mr. Rogers had won general good feeling by the straightforward course he had pursued. (Hear, hear.)

Mr. LYON, Secretary to the King's College Hospital, the second judge, said he also was of opinion that the experiment had been perfectly successful. It was the intention of Dr. Guy to have been present, but in consequence of the opening of the session he was unable to attend. He was glad to find that there had been no chairman provided beforehand, and no packed committee. He knew nothing of any of the parties, and had offered himself as a judge from the belief that, as acting in an official capacity, his testimony would be some guarantee of the fairness and impartiality of the experiments, to which he bore the strongest testimony.

Mr. GRIFFITHS, surgeon, of No. 1 Bloomsbury-place, had great pleasure in joining in the approval of his fellow-judges. He thought the application of charcoal to cesspools would be a very important benefit, as he had witnessed in the course of his house-to-house visitation many cases in which the removal of the night-soil was likely to be productive of more evil and danger than allowing it to remain. By mixing the charcoal with it all danger would be obviated, and he trusted the matter would be taken up by public bodies in the metropolis. In his numerous official visits to cases of cholera in the metropolis, with scarcely an exception, he had traced the disease as emanating from some of the filthy exhalations which were allowed to pollute the air.

Mr. J. E. YARROW, civil engineer, of 18 Adam street, and Cheshire, said he attended there as the representative of a large body of agriculturists of the county of Cheshire, who had requested him to investigate and report upon the various deodorizing agents now being put forward in the metropolis; and he expressed himself perfectly satisfied with the result. As a practical man, he believed that the charcoal might be applied with the greatest benefit to the towns in which large quantities of night-soil were collected; and he should be fully prepared, after what he had witnessed, to give the principle which Mr. Rogers has so fully established his best support. (Hear.)

Mr. NISBETT, the next judge who came forward, said he was only an accountant, and could not be supposed to know much of the nature of the experiments. He had been requested by his brother, Dr. Nisbett, superintendent and manager of the county lunatic asylum of Nottinghamshire, to accompany him to the meeting, his brother having been deputed by the magistrates of that county to report upon the plan. He took a handful of the charcoal out of the bucket, and also a handful of the mixture; he put each into a small paper bag, and on smelling both he could not perceive any difference. He did not feel himself competent to say whether the granulate particles were charcoal, but he could not perceive any difference between it and that which came from the machine. If the pecuniary part

of the process were found to answer as well as the chemical, Mr. Rogers would have conferred a very great boon upon society. (Hear, hear.)

Dr. WALKER, M.A., of Maidstone College, said the result had entirely answered his expectations; and, indeed, gone beyond them. It was true there was a slight smell of ammonia, but it appeared to go off very soon. He had attended more with an agricultural view than any other, in order to ascertain whether it would come within the range of farmers, so as to be made available by them without any considerable expense or costly machinery. If that were so, it would be of very great value, especially in the county of Kent, where the most expensive manures were employed.

Mr. SWINBURNE, a barrister, said he would premise that he was averse to the principle, having a plan of his own; but did not hesitate to say that, as a deodorizer, the charcoal was perfectly efficacious. He had tested the matter privately, and was satisfied that it was one of the most complete deodorizers they possessed. He should probably have the honour of submitting an antagonistic plan, and therefore his testimony must be considered the more impartial.

Mr. GARRETT, one of the commissioners of the parish of St. James, and one of the committee of the sanitary board, entirely agreed with the gentlemen who had preceded him. He thought it would be most desirable if the charcoal could be introduced into cesspools in the metropolis. He was not so favourable to machines, as they could not be so generally adopted; but the fact of deodorization could not be doubted. (Hear.)

Mr. NISBETT, an analytical chemist, was the last of the judges. He said it was known to chemists for a long period that charcoal was a powerful deodorizer; but much credit was due to Mr. Rogers for bringing the fact in a practical way before the public. As an agricultural chemist, he was very much interested in the subject; and in the present case he thought the result was highly satisfactory. If the pecuniary calculations were such as would enable the process to be carried on with advantage, the peat charcoal of the bogs of Ireland was likely to produce very valuable and important benefits in the heart of the metropolis.

The CHAIRMAN, in addressing the meeting, said: "You have now heard the opinions of the judges appointed, in which I most cordially agree. I was myself doubtful, but I am no longer so; and I must say I consider Mr. Shaw has been beaten in the battle (No, no,)—that is, I mean that Mr. Rogers has established his point." (Hear.)

Mr. SHAW was loudly called for, and said he would not presume to offer any opinion after the very able and satisfactory ones the meeting had heard. He was gratified to find that his challenge had been productive of such satisfactory results. He only trusted that Mr. Rogers's calculations might be borne out practically; and then, indeed, they would be enabled to say that they had achieved a great victory. He was very happy that he had *been beaten*; for he was satisfied that the value of a manure so composed as that presented could not be too highly estimated. He believed few things could effect greater benefit than such a manure.

Mr. ROGERS was then called for, and on presenting himself was received with loud cheers, which lasted for some minutes. He thanked the meeting sincerely for the approbation bestowed, but under existing circumstances would not trespass on their time more than to say a few words. As regards cost of the material, peat charcoal may be had from the bogs of Ireland, and will be sold in London by the Irish Amelioration Society, at all events, at £2 10s. a ton, giving fair, nay handsome, profits to the proprietors; and he was happy to say he could vouch for all parties connected with that society, that it was their anxious wish to reduce the cost as much as possible, in

order that it might be used to do away with the evils of the *horrid* sewers and cesspools of all large cities, and employ the people of Ireland. But what were cesspools compared to sewers! The former was the better of the two. Cesspools were, perhaps, 10, 15, or 20 feet deep, with a surface of only 3 or four feet square. The atmosphere acted only on the upper surface, whilst if that mass of 20 feet in depth were driven into a sewer, and from thence through miles of sewers, it would contaminate miles and miles of the city, giving out its pestilence to every place around as it went along, in place of yielding its evil at one spot alone. The noxious gases given out from cesspools were at least one thousand fold *less* than when the matter was driven into sewers. He had no hesitation in saying that so long as the present system continued of sending excretory matter into the sewers, thus diffusing deleterious vapours from street to street throughout the town, London would never be free from disease. (Hear, hear.) He was happy to say that if, in place of attempting to remove the contents of cesspools during warm weather, the surface was covered with 2 or 3 inches of peat charcoal, he could vouch that no odour could arise. This was not a theory. Above a year since he had been asked to try the experiment on a cesspool belonging to an eminent firm in Gray's Inn, not a thousand yards from where he stood. On examination he found it was so offensive that the windows of the back offices could not be kept open at times. He made the experiment, covered the surface with two or three inches in depth of charcoal, the result being that within a quarter of an hour all odour had subsided. The *cause* of the fact was immediately after debated by the parties present, and one of the firm alluded to, *who stood over the openings of the privy for at least half an hour!* thus proving that no odour whatever existed. This occurred last year, and about a month since he was informed it was still unchanged. (Hear.) Mr. Rogers having answered several questions relating to the fertilizing properties of *animalized charcoal*, concluded by offering his thanks to the meeting and to Mr. Shaw, for the fair and upright manner in which the tests had been made; and to the chairman and judges, to whom he was a stranger, for the highly proper and honourable course they had adopted in thoroughly investigating facts which interested every member of the community. Mr. Rogers retired amidst much applause. When thanks had been voted to the chairman and judges, the meeting was formally dissolved; but a very interesting discussion afterwards arose upon the subject of the plans proposed by Mr. Rogers for effecting "sanitary reform" in London through means of peat charcoal; and a wish was generally expressed that he should hold another meeting, for the purpose of making the public aware of his plans for that purpose and the presumed results.

For giving so much space to a subject, certainly not attractive *per se*, we hope to provoke attention, not only from farmers, but from the curators of the public health in large cities, where the circulation of this journal is extending, among those of all classes who desire to spread the conviction that between the man at the plough and those at the jack-plane and the trowel there is an agreement, instead of a diversity of interests; and that therefore, in place of a mean, despicable spirit of jealousy and ill-will, there should always prevail a feeling of harmony and benevolence. The conviction is rapidly spreading that the nearer the farmer and the manufacturer and mechanic work together, the cheaper and the more extensive will be the exchanges of the products of each other's labour.

But the question will arise whether some cheaper substance than charcoal may not be employed as a disinfectant. The reader will observe, however, that the charcoal here recommended is that of a cheap material, *peat*. Does not that material abound in many other parts of our country besides Massachusetts and New York, where they do employ it as fuel, and as an element of compound manure? We wish the inquiry 'To what extent?' could be embraced in the forthcoming census. But the subjects to be included in that, have been so much cut down by Congressional injunction, that the very efficient

Secretary of the Board, Mr. Kennedy, under whose supervision the next is to be arranged, will be much restricted in the exercise of his enlarged and liberal conception of what is needed to a full development of the products and capabilities of the country.

As to the most eligible substance to be employed in the preparation of night-soil for use as a manure, and one of the most efficient to be had, it is obviously proper in the first instance to guard against the use of such deodorizers as would counteract its well-known fertilizing powers: and what recommends charcoal, is the fact that it is known to be a manure of itself, acting as such, according to Professor Lindley, by first absorbing moisture, carbonic acid, and ammonia, from the atmosphere, and then yielding them to the plants which it surrounds. We ourselves first witnessed its powerful effects in the garden of Dr. Heiskell, at his residence in the Demenou building, at Washington.

The absorbing power of charcoal varies according to the texture of the wood from which it is made—the denser the wood the greater being the absorbent power of the coal.

The following estimate, says Dr. Lindley, of the quantities of various gases absorbed in twenty-four hours, by charcoal of boxwood, as given by De Saussure, will be found near enough to the truth to assist judgment for all practical purposes:—

	Volume.		Volume.
Hydrogen	1.75	Nitrous oxide	40
Nitrogen	7.5	Sulphuretted hydrogen	55
Oxygen	9.25	Sulphurous acid	65
Carbonic oxide	9.42	Muriatic acid	85
Olefiant gas	35	Ammoniacal gas	90
Carbonic acid	35		

It will be seen, at a glance, from this table, that a body capable of absorbing such large quantities of carbonic acid, sulphuric, hydrogen, olefiant, and ammoniacal gases, must be a powerful deodorizer.

COTTON MANUFACTURE IN CONNECTICUT.

FROM a report, published by order of the General Assembly of Connecticut, under an act "to obtain statistical information in relation to certain branches of industry," we extract the following useful information, the same being the returns made for that State for the year ending October 1, 1845:—

Number of cotton mills	137
" " spindles	199,945
Pounds " consumed	13,319,170
Yards " cloth manufactured	33,431,935
Value " " "	\$2,585,788
Pounds " yarn "	1,872,883
Value " " "	\$357,993
Dozen spool " thread "	70,000
Value " " "	\$18,500
Pounds " batting "	608,547
Value " " "	\$40,603
Dozen sheets pelisse wadding	30,000
Value " " "	\$8,400
Yards of cotton flannel "	47,817
Value " " "	\$12,042
Capital invested in the manufacture of cotton	\$3,312,450
Number of males employed	2,312
" females "	3,050
" calico factories	1
Yards " printed	2,000,000
Value " "	\$175,000

What we in particular would invite the attention of our readers to in the foregoing table, is the quantity of cotton consumed in that State, and the value of goods manufactured from the same. It will be noticed, that while 13,319,170 pounds of cotton were manufactured, the value of three manufactured articles, cloth, yarn, and batting, was \$2,984,384. We have not the means of giving the actual cost of the raw cotton to the

manufacturer, at his mill, during the year in question, but will call it, on an average, ten cents per pound. This will make the cost of the raw material given above, \$1,331,917. Deduct this sum from the value of the manufactured article, and we have remaining, \$1,652,467, to defray the expense of manufacturing and for profits. This latter sum goes to the operative, the mechanic, the merchant, and the farmer, and by its circulation helps to put in motion the whole machinery of human industry. Its influence is felt in every department of labour, and in every grade of society.

Is it strange, then, that these comparatively old manufacturing States have grown rich and prosperous? Let the West and South mark the causes of state and national prosperity, and profit by the instruction thus afforded.—*Cannellton Economist*.

Can any one say how much of the above sums goes back into the pockets of landholders, for first the cotton, then the flour, meat, milk, butter, cheese; and suppose the operatives and their employers made ten dollars where they make one—would it not make them so much the better *customers* for the farmer and the planter? Is it not obvious that for their interest, the nearer the shuttle and the anvil, the pick-axe and the trowel are to the plough, and the *more flush of money* those who work at them are, the better for the agriculturist? So much so as that they could afford, if required, (which they are not,) to pay a little more for their iron and cloth and cotton goods, and roads and houses? But wait a little—"a better time is coming!" The people are coming to their senses, and beginning to see that they can get along without being ridden by demagogues "booted and spurred." They are beginning to see that protection to American industry is not properly a *party* question, and that they may be true to their party without being in favour of encouragement to foreign labourers in a contest with our own people. If of these two facts they need any better proof, even good democrats, who are contending for what they believe to be best, will find that proof to their satisfaction, we would think, in the following letter from GENERAL JACKSON, who was, we apprehend, good enough democrat for all American ends and purposes:—

"Where," says General Jackson in his letter to Dr. Coleman, in 1824, when wheat was selling for \$1-14, "has the American farmer a market for his surplus product? Except for cotton, he has neither a foreign nor a home market. Does not this clearly prove, where there is neither a market at home nor abroad, that there is too much labour employed in agriculture, and that the channels for labour should be multiplied? Common sense points out at once the remedy.—Draw from agriculture this superabundant labour, employ it in mechanism and manufactures, thereby creating a home market for your breadstuffs, and distributing labour to the most profitable account, and benefits to the country will result. Take from agriculture in the United States, six hundred thousand men, women, and children, and you will at once give a home market for more breadstuffs than all Europe now furnishes. In short, sir, we have been too long subject to the *policy of the British merchants*. It is high time that we should become a little more *Americanized*; and instead of feeding the paupers and labourers of England, feed our own; or else, in a short time, by continuing our present policy, we shall all be rendered paupers ourselves."

Tobacco for France.—The French consulate in New York gives notice that proposals for supplying the national manufactories of tobacco will be decided on, at the Ministry of Finance in Paris, on the 20th December next, at one o'clock P. M., for the quantities following:—

One million and eight hundred thousand kilogrammes of Virginia leaf tobacco, of the crop of 1849, according to four samples.

One million and nine hundred thousand kilogrammes of Maryland leaf tobacco, crop of 1849, according to four samples.

Two millions and two hundred and forty thousand kilogrammes of Kentucky leaf, crop of 1849, according to four samples.

And two hundred thousand kilogrammes of Havana leaf, crop of 1849, according to two samples.

SIMPLE REMEDY FOR "HOVEN" IN CATTLE.

CATTLE are very liable to become "hoven," or suddenly blown, on being suddenly turned in to eat "their fill" in damp rich pastures, especially of clover. So rapid and fatal are these attacks that there is no chance of saving the animal but by the immediate administration of some effectual remedy.

The remedy most commonly used is the introduction of the "choke pipe," or œsophagus-tube into the stomach. Sometimes resort is had to "paunching," or stabbing with an ordinary knife in the left side, about a hand's breadth from the hip and equidistant from the loins, which affords instant relief, but both these are more or less critical and dangerous remedies in the hands of ordinary farmers; and, besides, a quantity of the contents of the stomach is apt to escape into the abdominal cavity, remaining there as a source of irritation and disorder for a long time. We remember to have seen two valuable young cattle so saved many years since, by the late eminent and much lamented doctor, John Owen of Baltimore; but their health was for a long time impaired, and their growth checked by the operation.

A veterinary surgeon, in the last number of an English journal of very high authority, states what may be useful, sooner or later, to every practical farmer, and hence we are induced to transfer it to the pages of "The Plough, the Loom, and the Anvil." He says:—

I have long looked for an agent which could be used with perfect safety by the agriculturists, and at the same time be one of the most likely means of cure, or, at least which would give such relief as would afford time for other assistance to arrive, if necessary. Common hog's lard is an article which can be procured at every farmhouse, and I can speak very highly of its good effects when given in cases of hoven; I have advised the use of it to my friends for the last twenty years, and every succeeding year increases the favourable opinion I entertain of it. I have no hesitation in saying, that if it be given at once when the animal is perceived to be swelled or hoven (in the manner I shall hereafter point out) that relief will be very speedily obtained; but if the giving of it be delayed, more powerful agents may be required; but nineteen out of twenty of the common cases of hoven will be relieved by it, and no after-treatment required; and it has this advantage, that the dose may be repeated with safety. To a feeling mind nothing can be more annoying than to be called to a case, and find the animal dead or past recovery, and to know that in all human probability the animal would have been alive under simple remedial means.

If I do not take up too much of your valuable space, I will relate the two following cases, which I think and hope will convince your readers of the efficacy of the plan I propose; and I trust it will not be put aside from its simplicity, as that is the very point I have studied to attain.

Some time since I was sent for by Mrs. Hunt of Harlington, with a message that her cows had got into the clover, and that one of them was hoven. Before I could get there, or she could be got home to the yard, she dropped on the road and died. Two others I found blown up immensely in the yard. I told Mrs. Hunt that though I had plenty of other remedies with me, yet I should wish her to manage these two herself, and I would show her how; and then she would know another time what to do herself, and what to tell her neighbours to do in the same difficulty. I then desired her to get me about a pound and a half of lard, and a three-pint or two-quart jug, and to put the lard into the jug, and fill it up with hot water; and when it was melted, and cool enough, I ordered the men to give half of it, out of a horn or bottle to each cow, and then to hold the cow's head out straight, while I pressed moderately heavy on the left side of the body, where the stomach blows up most. About a quarter of an hour or twenty minutes afterwards they were able to walk about, and nearly all the gas had subsided, partly by

escape up the throat, and the other by the action of the lard on the coats of the stomach. As they were going on comfortably, I left them, and they did very well.

The next case is one that I think will carry with it a very strong evidence of the value of this plan of relief. About a month back the cowman at Mrs. Gostling's, Whitton Place, came in a very great hurry, and told me he had got several of his cows hove, and wished me to see them as soon as possible. He said they had only been out two hours into a fresh piece of grass that had been shut up a fortnight. As soon as he perceived it, he came away for me; and while he and my man were putting a horse into a gig, I put into it what medicines were necessary, and a flexible tube, and was not more than two minutes in starting; and although I had less than a mile to drive to the cows, when we got there three of them were quite dead, and five more blown up so that they would not move, and they required earnest persuasion with the whip to keep them on their legs. I ordered them to be moved as well as they could into the cow-yard close by; and then determined, in this desperate case, to use my remedy. I therefore sent the butler into the kitchen to get about a pound and a half or two pounds of lard, and to put it into a three-quart jug, with two quarts of hot water, and to bring it to me moderately hot. While he was gone, I gave one of the worst cases some castor and linseed oil, with the cajeput oil and spir. ether. nitr., and left one of the worst cases for the lard, and also one not quite so bad as the first for the same; to the other next worst I gave the oil, and to the fifth I gave the lard. As soon as I had given them their doses, I had their heads held out straight, and their stomachs well pressed down for some time, by two men spreading their hands out wide over the highest part, towards the hip, till we found the wind break off up the throat, which is much facilitated by letting an assistant, while the head is held out straight, lay hold of the tongue, and give it a good pull now and then—not a violent one, but sufficient to make the cow try to get it away; and then let it go again, and it will generally be found that the wind will force its way up to the throat directly afterwards. The quantity of lard I gave to each was about a pound, and in half-an-hour, or three-quarters at the furthest, they were all out of danger, and would have eaten food if I had allowed them. Those that had the oil were the quickest relieved. Although I had the flexible tube with me, I did not use it, deeming it necessary in a fair trial to do without it.

I am quite sure you will feel as happy as I shall, if the insertion of the above in your valuable magazine should prove the means of saving animal life; and I am quite sure I shall have the thanks of every veterinary surgeon in practice among the cattle districts, as nothing is more painful to both the medical attendant and the owner than their meeting together after the animal has died, which often happens when every possible exertion has been made to arrive in time to relieve them.

I have no doubt the same plan, if adopted in time with sheep, when blown on clover, would relieve them immediately.

I remain, sir, your obedient, humble servant,

Hounslow, September 22.

PETER BOUGHTON,
Veterinary Surgeon.

Wheat.—"Thirty-seven stalks from one seed," says the editor of The London Agricultural Gazette, "are not an extraordinary occurrence, where plenty of room is given for the plant on a rich soil."

TOO MUCH LAND AND TOO LITTLE CAPITAL.

THAT this is the condition of the agriculturist in the old States, generally, and more especially where, under the cry of "free trade," the consumer has not been drawn near to the producer, there is, we believe, no longer any doubt. For a long time, the minds of the agricultural community lay waste, as well as their lands; deterioration and ignorance, or indifference to the means of improvement, went on together, until some forty years ago, such men as Lowell, and Pickering, and Parsons of Massachusetts—the Livingstons, Stevens, Mitchell, L'Hommedieu, Van Rensselaer, and many others in New York—Peters, and Lorain, and Worth and others in Pennsylvania—Cooper, in New Jersey; Bordley, in Maryland—Taylor (Arator), Minor, Jefferson, T. Mann Randolph, Madison, Garnett and others in Virginia—and the Pinkneys, and Hamptons, and Singletons, and other bright names and bright minds in South Carolina, began to rouse the public attention to the fact, that for its resuscitation and improvement means might be found; but that, for its own security and honour, it was to be done by *intellectual inquiry and the application of science*.

The sparks of inquiry which they supplied, and were trying, with patriotic enthusiasm, to blow into a flame, were very slowly kindling—sometimes almost expiring, and again breaking forth with fitful blaze, here and there—when it occurred to the Editor of this journal, that what was necessary was to *lay a train that should extend from one fire to another*—to offer a common medium of communication, that should accelerate the *spread of the flame*; in a word, and without a metaphor, to establish an *agricultural journal*, through which the friends of the cause, throughout the country, might communicate their experience, and make inquiries of each other, and thus diffuse, over the whole country, the knowledge and the zeal which existed only in spots, here and there. Hence the establishment of the old *American Farmer*, published at his individual cost, without a single patron, or waiting for assurance of any support, but, on the contrary, against the persuasion of a few friends who wished well to the enterprise, but doubted its success, knowing how little there was of *esprit du corps*, or professional spirit and pride, among farmers. So were Fitch, and Ruemsey, and Gray, inventors of steamboats and railroads, laughed at and left to starve.

Well, what is the state of things now? Why, now we find the agricultural community generally well enough informed as to the means and the processes for improvement! *Now*, they know generally, and well enough the value of lime, and draining, and guano, and plaster of Paris, in behalf of which last, Judge Peters was compelled to write essay upon essay, detailing experiment on experiment, before they ceased to laugh at it as a humbug, and at him as a *book farmer*! *Now*, they know well enough the value of labour-saving implements, however low their estimate, if we may judge by the *premiums* they offer; *but*, now that they know all this, in what condition do the owners of these immense tracts of worn-out land in these old States, *where all are agriculturists*, find themselves? Why, with hundreds and thousands of acres of exhausted lands—houses and gardens, and orchards and fences, in a state of dilapidation, with full knowledge themselves of the means of recuperation, and with industry enough to put those means into efficient execution, but *without a dollar of capital*. In this state of things, what occurs to them? Why to sell a part of their lands, and with the proceeds improve the rest. This discovery is easily made—it lies on the surface of inquiry. But then the question arises, *who is to buy?* Why, says he, I will offer my spare land to the man at the

north, where population is dense and the land high—where the hive is full and the bees are swarming. But, say these bees, instinctively—for the instinct of bees is wonderful—have you any honey near your fields?—where are the flowers from which we are to gather it? You know a good plough from a bad one—you know the value of manure, and the value of diligence in the use of both, as well as we do—How, then, are we to live where you are starving? We are prospering in the North, and we could get from \$50 to \$100, and even \$200 an acre, for land no better than you would sell us for \$12. But,  Where are your customers? What is your expense of transportation? Have you got the loom and the anvil near to the plough and the harrow? Are your *consumers* prosperous in their condition, and in numbers large in proportion to your producers, and close to them to ensure ready demand and cheap transportation? for these are the circumstances under which our lands have improved in production and in value. We go for protecting the coal miner, and the ironmonger, and the woollen manufacturer, and the shoemaker, and the tailor, against their pauper competitors in Europe, where labour is down-trodden and starved; because, even if we did pay them, *at first*, a little more for the products of their labour, these products consist almost entirely in what *they buy of us*, and, being near to us, buy with so little deduction for the cost of transportation! If, then, you want us to come and buy your old worn-out lands, or your rich lands, you must cease to cry “*free trade—free trade.*” You must agree to let us draw the consumer close to us. You must now, as Mr. Jefferson said, in 1816, “*place the manufacturer by the side of the agriculturist.*” If you will not do that, how can any man prosper, even if you *give him the land* sixty, or fifty, or forty, or even twenty miles from navigation and market? What has saved all Maryland and lower Virginia from devastation and abandonment but the *virtual proximity* to their consumers, consisting in cheap transportation—four or five cents per bushel on two hundred miles of natural tide-water communication?

No! No! my friends, say the northern and eastern men—the men of Massachusetts for instance—we all went dead against your tariff of '24, for example, even our great leader, “Black Dan,” voted against it; but we made a virtue of necessity, and now, instead of twenty consumers to one hundred producers, *nous avons changé tout cela!* we have changed all that—we have more of the former than of the latter, and he that can produce even a quart of blackberries can find a market for them, within the smoke of his chimney. You say no! let us sell where we can sell for most, though it be to John Bull; and buy where we can buy cheapest, though it be of Swedish or British iron, to lay down the railroads that run through our own coal and iron mines, in our own mountains! Yea verily, says the man at the North, and you see where it has left you, at the end of seventy years; that we have been, as General Jackson said, in 1824, “too long subject to the policy of British merchants!” Truly, as he further said, “*it is time that we were a little more Americanized.*”

Agree then, says the friend of *protection to American labour*, to become so Americanized, according to his recommendation, and we will agree then to come and buy your lands, and then you will have, from the sale of a part, the capital to improve the residue; and the half will yield you more than the whole does now; and we will have, for what we make on the part we buy, a market near the land for the products of the land; for it is that which has given value to the lands of the manufacturing States, until, in any direction three miles from the Boston market-house land is worth \$1000 per acre. This policy, and this only, will give value to the naturally much more valuable lands of Maryland, Virginia, and the Carolinas.

As for the much-talked of improvements of Virginia lands in Fairfax county, by northern settlers, we have long apprehended, and now more than suspect, there is in all that much more of romance than of reality. On this we shall have more to say, after a late opportunity of, it is true, rather limited observation in person. But for every effect there must be an adequate cause; and as soon as such cause comes into existence, the effect *must follow*. The cause of deterioration of agriculture in the old States, is *not* want of industry or of knowledge. The agriculture along the tide-waters of the eastern shore of Maryland, some of which we have lately had the pleasure to see, is neater and better executed, and the principles of good husbandry are as well understood, if not generally better, than in the New England States. This may be denied. It is easy to deny and to denounce any thing; but it is not always so easy to prove the untruth of what we deny. If we have recommended, and still earnestly recommend, the young farmer of the Southern States to make a tour of New England, it is not that he can learn there more of the *principles* of his profession—of the value of good machinery, and the beauty of neat culture; but that he may see how inseparable is the improvement and the high price of land, and the cultivation of a thousand things, (neglected resources of the “free trade” States,) where there is that *density of population* which is the sure fruit of diversification of pursuits—which is itself, again, the sure fruit of protection to home industry, and the encouragement of the home market; where, in a word, there is that density of population which, by increasing demand, leads to the improvement of the land, and forces the food to come out of it, making there a pound of milk worth as much as a pound of butter, where population is sparse,—as it must ever be in “free trade” States and countries.

Let the common notion be what it may, the best specimens of thorough culture are to be found on large plantations in the South, where intelligent and watchful and absolute authority ensures to large forces the exact results of military precision. In fact, nothing short of untiring energy and the most skilful application of their means could keep their chins above water, while they continue to send their cotton to the looms of Europe, instead of compelling the looms and the capital to come to the cotton, making their market nearer the land, for the products of the land, and substituting the greater steadiness of the home, for the ever-fluctuating foreign market, which rises and falls according to influences over which we have no control.

We may not unaptly close these remarks with a quotation from an able and impartial work, by a British subject, just before our Revolution, on the “soil, climate, productions and agriculture of the British Colonies in North America and the West Indies.” He and General Jackson seem to have thought alike—the one thinking for the interests of the Mother, the other for the Daughter:—

“This,” says the writer referred to, “is a material point. It is a very good thing for Great Britain that the [northern] colonies which have not staples do not increase so quick, for if they did, their manufactures, &c., would increase proportionably; but that increase in the southern colonies brings on an increase of the staple products, and also a proportionable consumption of British manufactures. The *independency* of the colonies, whenever it may happen, must turn on this point; the increase of people in those settlements which have no staples. The increase in those which have staples must always be for the advantage of the mother country. This is the true description of a colony founded on just principles, and the great object to be attended to is, the people’s *employing themselves in a business* wherein they cannot interfere with Britain.” The reader will remember that this is a British writer pleading for British interests. Truly may we say again, with General Jackson, “*we have been too long subject to the policy of British merchants. It is time we were becoming a little more Americanized.*”

WHAT WILL ALWAYS HAPPEN TO A PEOPLE WHO CONTENT THEMSELVES WITH STANDING STILL AND CRYING "FREE TRADE!—GIVE US FREE TRADE!"

THERE were so many errors committed in the publication of our article on "The Resources of North Carolina," in "The Agricultural Gazette" of November, that we have sent it again to the printer, with some addition, making it like her N. B., the *most important part* of a lady's letter. Here we have roughly sketched the reflections arising on a hasty comparison of the progress of North Carolina and Massachusetts, prompting the inquiry as to the former—what disastrous influence is it that has suddenly checked the growth of this noble confederate of the republic? Of expanded surface, various but almost everywhere delightful in her climate, and in all times distinguished for hospitality and patriotism; among, if not *the* first, to declare herself in favour of independence and self-government; how is it that, during the last decennial period, she should have halted, like a noble steed suddenly "let down" in the race?

Comparisons are *odorous*, as Dogberry says in the play,—but for purposes of politico-economical inquiry they are often useful. Let us then compare the old *North* with the old *Bay State*. In *geography*, she spreads over an area three times as large. In *topography*, there is a striking resemblance; according to Darby, "mountainous in the west, hilly in the central, and low and sandy in the eastern sections." In 1790, North Carolina began with a population of 393,371. Massachusetts with 378,717. From that time to 1830, for forty years, North Carolina continued to widen the gap, coming out by the census of 1830, with a population of 737,987, while the old Bay State was short of her by 127,579—her population being then but 610,408. But how was it in 1840? say in fourteen years after Mr. Jefferson said it was "time to place the manufacturer by the side of her agriculturist?" The policy of protection being established by the votes of the South, Massachusetts wisely determined, as it was forced upon her,* to *make the most of it*; and began, accordingly, to draw the loom and the anvil close around the plough and the harrow. Though she had not the great materials of coal, iron, leather, or cotton, or wool, or corn, or beef, she set to work to build factories; and now she makes shoes and ploughs, and spades, and screws, and jack-planes, and pails, and piggins, and brooms, and broom-handles, and combs, and almanacs—in short, what does she not make for the people of the good old North State, except turpentine and corn; and what is the result? Why, at the last census she had nearly closed the gap between them, and instead of being 127,987 behind her, in population, she had reduced the excess over her to 15,720; and will pass the poll ahead of her in 1850. And then, will her sons, who refuse to read "The Plough, the Loom, and the Anvil," because we point out these things, more in sorrow than reproach, still shout for "free trade?"

Very well, we know the advantage enjoyed by Massachusetts in her seaports; but why did that advantage never tell, until she determined to seize the benefits held out, even by a precarious system of protection, instead of standing like a mulish child, biting her thumb, and crying for *free trade*? And has not North Carolina always enjoyed the *freedom* of being compelled to send away her corn to be eaten, and her cotton to be worn, and her tobacco to be smoked in old England and New England; bringing back half

* Against the unanimous vote of her delegation, Mr. Webster included, in 1824.

their value in hoes and ploughs, and shoes, and blankets, and cloths, and molasses, and onions? while her sons and her grandsons pride themselves on all holding on exclusively upon the plough, the field-pea, and the pine tree. Has she not had "free trade" with a vengeance?

Now let us see again the effect of diversifying employments, and of bringing the consumer to take his place by the side of the producer. Here we behold these two States maintaining their relative position in the race for forty years; Massachusetts rather giving back, her people being, even as late as 1820, employed in large proportion in agriculture, compared with their employments in other pursuits. Previous to that time, when the old North State was not only holding her own, but rather opening daylight between them, the sons of Massachusetts, in want of custom for the products of the plough, were swarming off to look for wild honey in the West. They thought the hive was crowded. Thus we see, that in 1820, she had employed at the plough and the spade, 63,460; and at the loom and the anvil, only 33,464. Then she stood 127,000 behind North Carolina in population, *but* when she changed her system, and determined to *diversify employments*,—to bring the consumer near to the producer, that she might lessen the cost of transportation and exchange, and return to the land (the great machine of production) the refuse of its products; see how, like magic, a change comes over her dream! At the time to which we have referred, the proportion employed in North Carolina was, in agriculture, 174,196, manufactures, 11,844. Well, now the bugle sounds for another heat—the judges take their stand, and how do these gallant sisters come out at the close of it in 1840? Massachusetts now only 15,720 behind; her population had shot up from 610,408 in 1830, to 737,699 in 1840; having increased in only ten years 127,291; while North Carolina, in the same period, had increased only 15,433; having gone from 737,987 up to 753,419. But see again how differently the two people had been employed. Massachusetts had nearly trebled her manufacturers, thereby placing the consumer within reach of the producer. As between these two classes and the products of their industry, it was—*here's one and there's the other, and her lands more than double in value*. While North Carolina had in the mean time *increased her proportion of agriculturists* to manufacturers; those employed in agriculture being in 1840, 217,095; in manufactures, only 14,322; or *one* at the loom and the anvil for *fifteen* at the plough; *one* consumer for *fifteen* producers! Massachusetts an *equal number of both*. Does not this show how indispensable to the growth and prosperity of States is *diversity of occupation*? and how diversity of occupation leads to increase of population, and how increase of population leads to the establishment of schools, to the laying down of railroads, and the creation of wealth by the power of steam, which again *virtually* doubles and redoubles population a thousand times in as far as augmenting the products of industry is concerned; increasing the value of land in proportion, until now, land at any point, on any road three miles from the Boston market-house, commands \$1000 an acre! Well, it is for telling and demonstrating these truths, for the benefit, not of the loom and the anvil, but of *the plough*, that we are denounced by men who make no other attempt to answer our arguments but by obloquy and the withdrawal of their patronage. Yet, do those whose interests we are incidentally serving come to our aid? We are accused of being "sold to the manufacturers." How is this? In Rhode Island, the manufacturers *are some*!—and how many subscribers are there, does the reader suppose, for "The Plough, the Loom, and the Anvil?" Somewhere, we believe, short of thirty! in Pittsburgh, not half as many! Well, be it confessed, it is not for *their* interest *per se*, that we are labouring a little harder than any operative in their works; but because, as

here we have demonstrated, the prosperity and *proximity* of the loom and the anvil are indispensable to the *welfare of the man at the plough*. Yes! were we called upon in the midst, and by the united voice of every land-holder in the United States, for whom we have been labouring conscientiously for more than thirty years, to express most sentimentally and frankly our opinion as to what is best for the *farmers and planters of the United States*, we should say, with the hand upon the heart, and the heart upon the tongue,—“*The greatest possible variety of, and prosperity to, other pursuits, in the nearest proximity to the plough and the harrow in our own country.*” It was, as we have always avowed, principally to demonstrate this truth, the understanding of which is indispensable to general agricultural improvement, that the Editor consented again to connect his name and to give his whole mind and faculties to another agricultural periodical—one which we fearlessly say deserves to be read by every agriculturist in the Union, and not the least by those who dissent from its doctrines, but who are not afraid to look an argument in the face. Let those who differ with us show their confidence in their opinions by answering our arguments, not by *refusing to hear them*.

There need be no poorer land on earth than is, naturally, much of that of Massachusetts—a sorry and singular combination of dead-looking *sand and stone*! But population will draw the food *even from these*!—insure to the farmer a ready and steady demand at his door, and for the rest you may *leave him to the instinct and promptings of his own nature*. He will soon find out how to increase his crops. Cattle-shows serve him for amusing holidays. They amuse the wives and daughters, and give *them* too, very properly, a chance to show their ingenuity and skill in the handiworks of the butter-ladle and the needle; but the assurance of a *market at hand* is the great thing to insure improvement, for then the land gets back the refuse of its products; and these are sold without ruinous deductions to cover the cost of transportation. But look again at the course of things where a people have begun to realize the advantage of having the producer surrounded with prosperous consumers near at hand. In all North Carolina there are but *four towns* altogether, with a population rising *above 2000*, and of these *not one reaches 5000*! These are:—

Wilmington	4744
Fayetteville	4285
Newbern	3690
Raleigh	2444

While Massachusetts has *six towns* rising *above 10,000*, and *fourteen* above 2000, of which ten are above 5000: and then look at their educational statistics:—

In 1842, Massachusetts had scholars at the public charge	158,351
North Carolina	124
Whites unable to read or write in Massachusetts . . .	4,448
In North Carolina	56,609

Then look at their railroads:—

North Carolina, with an area three to one, has . . .	245 miles,
Massachusetts	700 miles,

in which, in 1848, she had invested of capital *paid in*, \$25,889,591, and on which, *in that year*, 5,539,828 *passengers were transported*!

Now, readers, especially our friends of the old Atlantic States, you must not believe that we take any pleasure in bringing these facts before you, but feelingly the reverse—yet you must *remember what our office is*!

Have we not promised to devote our time and faculties, for the remnant of our lives, fearlessly and honestly, and, God knows, with heart as well as mind, to lay before you, as well as we can comprehend them, the *true causes of agricultural decline and of agricultural prosperity?*—and seeing here, that where people who have, by nature, almost no facilities for it, betake themselves to the manufacture of your raw materials, sending them back to you after deducting all the profits of manufacture,—seeing, I say, these people who, like you, were formerly sticklers for free trade, now diversifying their labour, and every year increasing the number of consumers in proportion to producers, their *land all the while becoming enriched and enhanced in value*; should we not be recreant to our own duty, and humiliated in our own esteem, if we failed to warn you to take this question of the development of your own resources and the protection of your own industry out of the hands of political partisans and office-jobbers, into your own keeping? How easy would it be for us to turn to the index of one of our own old volumes of ‘*the American Farmer*,’ twenty-five or thirty years ago, and tell you from that, how to “pen and breed fattening hogs,” how well they “thrive on pumpkins,” how a “Mr. Peck made one hundred and twenty-four bushels of corn an acre,” and “John Bellenger 119” in 1821, while in 1849, twenty-seven years after, the Maryland State Agricultural Society gives one of its highest premiums for a little more than half that! I might reprint for your inspection the valuable papers committed to me by that eminently worthy and distinguished friend of agriculture, G. W. JEFFREYS of North Carolina, in 1820, where, even on the subject of turnip-culture may be found one of the best papers that has appeared in any country at any time. I could show you how, twenty-eight years ago, Warner Washington of Virginia made fifty-five bushels of wheat to the acre, but what good would all that do? what would there be in it *new* and profitably available? What we want is a *market*,—consumers close by, here at home, growing up around us under circumstances and measures within our own control. Will you then, farmers of North Carolina, continue to cry “free trade”—continue to send away your produce out of your own State, to New England and to old England, you losing the cost of transportation; *or* will you enforce a policy that will compel the manufacturer of Europe, whether it be of cloth or of iron, to come to you and manufacture the wool and the cotton of your own fields, the iron of your own mines, and the timber of your own mountains, eating all the while your own corn, and your own mutton, your eggs, and your butter, your potatoes and turnips? for this you may rely on it is the true road, after all, that will ultimately enable us all to advocate free trade. Where the loom and the anvil are close to the plough, *milk* fetches as much per *pound* as *butter* does in North Carolina, where all are at the plough, and nobody comparatively at any thing else. If you believe in these doctrines, take hold of, and help us along with *this* plough. If you don’t, tell us *why you don’t!* but don’t be content with mere naked denunciation and abuse, for—if affectionate admiration—if homage for their hospitality, their courage, their probity and their patriotism ever was well rooted in the heart of man, such sentiments have ever been ineradicably fixed in ours, for the people of the Southern States as a people! We have eat salt with them, and we think we know them. We are, in fact, ourselves, bone of their bone and flesh of their flesh, but that only makes us the more regretfully feel that, the longer they content themselves with crying free trade, sending all the products of their lands to be sold far away from their lands, the further will they fall back in the wake of other States in the race of industry and progressive improvement. To show that we do not exaggerate, hear the eloquent lamentations of Judge STRANGE, himself among the most gifted

and devoted sons of the old North State, in an address recently pronounced to the gentlemen of the Literary Societies of Davidson College, an address that, had we the power, we would cause to be prefixed to every school-book in the State.

"But with regret I say it—there is in our own State a lamentable (nay, shall I not be pardoned for saying, a shameful,) deficiency of State pride. Among the cultivators of the soil, among the more ordinary classes of our citizens, I trust, nay I believe, this is not the case. But among the educated portion of our people, this want of State pride is sadly conspicuous. Its monuments are around us in every direction. In our unthinned forests—in our deserted farms,—in our dilapidated villages,—in our decreased representation in the National Legislature. A large part of our products are ascribed abroad to other States. They deck themselves, as it were, in the plumage of which they have despoiled us. We share little in the profits derived from converting our raw materials into articles of immediate use,—of sending them to foreign markets, and making those exchanges which of themselves alone have rendered so many nations, both ancient and modern, proud, prosperous, and happy. A great portion of our fellow-citizens are enriching, with their talents and their wealth, other States, and in the same degree impoverishing their own, by a change of domicile. Yes, the North Carolinian wanders from his native land, and leaves the sweet fields of his childhood with scarce a tear of regret. Home! that word of such magic power over most hearts, seem to have with him an indefinite signification, or at least to know no limit but the wide-spread regions where the stars and stripes of America are seen to wave."

After all, the truth is great, let us hope that it will prevail. For ourselves we will follow wherever she appears to lead; even though it should be on the back track. Fools only believe themselves infallible—they only are ashamed to retract, when convinced of their error.

Boston.—The subjoined is an estimate given by the Boston Courier, of the amount its citizens have embarked in a few leading enterprises, principally since the spring of 1846:—

In factories and manufacturing cities, the cities enumerated, ...	\$13,000,000
Purchase of Railroads out of State, ...	8,000,000
Extension of old lines of Railroad, ...	6,000,000
Construction of new Railroads in Massachusetts, ...	7,000,000
Construction of new lines out of the State, ...	12,000,000
Boston Aqueduct, estimated cost with reservoirs and dead interest, ...	4,000,000
Stock taken in United States Loan, ...	7,000,000
	\$57,000,000

Amount unpaid less than \$7,000,000, July 20, 1848.

Estimated dividends to be received by citizens of Massachusetts, April to June, 1848:—

From Banks, ...	\$2,000,000
United States Loan, ...	400,000
Railroads, ...	3,000,000
Factories, ...	3,000,000
Accumulation of Savings Banks, ...	1,000,000
	\$9,400,000

The valuation of the State for 1848, if the increase of value in Boston and its vicinity be any criterion, must exceed \$450,000,000, and the annual accumulation little short of \$22,000,000.

Paring and Burning.—The immediate effects of this process are four-fold. 1st. It destroys a large quantity of organic matter. 2d. It alters entirely the texture of the portion to which the heat is directly applied. 3d. It reduces to a caustic state the alkalies and alkaline earth contained in the burnt portion; and, 4th. By means of these alkalies it acts upon the remaining organic matter of the soil exactly as lime does.—*Prize Essays of the Highland Society.*

REFLECTIONS ON THE PAST AND PRESENT CONDITION OF AGRICULTURE IN MARYLAND.

By the Editor of the Plough, the Loom, and the Anvil,—suggested by a late visit to the Easton (Talbot County, Maryland) Cattle Show.

A LONG-wished-for opportunity was lately embraced, to sojourn for a few days with our old friend, and quondam brother purser in the Navy, at his quiet and most enjoyable residence, at Perry Cabin, in what is called the "Bay side" district of Talbot County, Maryland.*

The occasion was used, to look again more minutely into the wheat and other husbandry of a region very attractive and remarkable on various accounts; and first and above all, on account, shall we say, of the *proverbial* morality and industry of its inhabitants—the paternal kindness of the master and the grateful and affectionate fidelity of the slave—the obvious watchfulness of the farmer for all discoveries in the art of tillage, for all means of restoring the perpetually exhausting effects of a husbandry that sends all its staples away to be consumed at a distance from the land;—and the attention, of some of them to the means of improving their domestic animals, as well by good keep as by judicious crossing,—if any crossing be judicious, which rarely is so in our judgment. These remarks, though made in particular reference to the farms of Messrs. Samuel and John Hambleton, near St. Michael's, would not warrant, by any means, the inference that we intend to apply them exclusively to their estates. Nevertheless it is easy to see, how profitably contagious, for every neighbourhood, must be examples such as theirs, that speak for themselves and proclaim to every one their good results. Of these results and their extended influence, it is enough to say, that lands which not many years ago might have been and were bought for from \$10 to \$15 and \$20 an acre will now command \$30, \$40, \$50, and even \$60 an acre in that county; and how, reader, has this been brought about?—Not, you may be assured, by any extraordinary change in the external or internal affairs or markets of the country, but by the diffusion of knowledge through agricultural journals, communicating to all the most successful practice of the most skilful and prosperous farmers; making common property of that knowledge which otherwise would have been confined to a few. And let it not be alleged that because a comparatively few patronize these journals, that therefore their influence has been small and limited; for be it remembered that the very act of giving support to, and reading such papers is *prima facie* evidence of a liberal and benevolent spirit, such as would lead the men who take and *read*—(for alas there are some who take and *don't read!*) them, to communicate for the benefit of others what they have found beneficial to themselves; and thus it often appears that men too stolid to read, or too stingy to pay a small pittance for what they contemptuously style *book knowledge*, owe much of their success in farming to that very knowledge, derived through the conversation and practice of those who *pay for it*.

As to the auspicious influence upon neighbourhoods of a few exemplary men, we remember reading in a letter of Doctor Johnson to a young clergyman, where he says he had been told by the dean of Carlisle, who was then a little rector in Northamptonshire, that it might be discerned whether or not there was a clergyman resident in a parish, by the civil or savage manners of the people. He added that, a very savage parish was civilized by a

* The proprietor, Purser Hambleton, was the intimate friend and close companion in battle, of the Hero of Lake Erie, hence the name of his place—*Perry Cabin*.

decayed gentlewoman, who came among them to teach a petty school. Let us then lose no occasion—nay, would we not be justified in going a little out of our way, as perhaps the reader will think we are now leading him, to exhort every agricultural community to remember, that, yet more than on the exhibition of fat hogs and sheep, the intrinsic value of their lands depends upon the uprightness, the morality and intelligence of their neighbourhoods—who would think, whether his capital be large or small, of buying a farm with an habitual drunkard or quarrelsome bully for a next neighbour? Who would seek to locate and bring up his children where there were no facilities for civil or moral education? Who would carry his flocks, where, ever and anon, thieves “break in and steal?”—but we are getting off from our subject,—it is only *dogs* that break in and destroy the flocks on the Bay side. Mr. H. and his neighbour had twenty fine fat sheep so killed in one night just before our visit.

If any one wants to see, as far as the season has advanced to develope it, beautiful specimens of *drill husbandry*, let him visit the farms of the gentlemen we have taken the liberty to name, and if he possess the taste and susceptibility to the beauties as well as the profits of good husbandry, (a susceptibility by the by which constitutes an earnest of success, and one of the enviable delights of rural life and occupations,) he cannot fail to be charmed with the neatness and style of operation displayed in the fields to which we have referred.* A view of them will give him, if any thing were needed to give him, a better comprehension of the importance of *perfect tilth*, so clearly and well illustrated in the essay published in the September number of the Plough, the Loom, and the Anvil, which, by the by, we were gratified to find, with the *leaves cut open*, on the table at Perry Cabin,—an essay which we again say ought to be read and studied not only by every grain-grower, but by every cultivator of the soil in the Union. And here we may venture the inquiry, whether drill husbandry would not be fully vindicated and justified, were it only in consideration of the *more perfect tilth* and finer order of the soil which it superinduces? The drill used by Mr. Hambleton, and which operates “to a charm” was made in Wilmington, Del., and cost \$100. It is an improvement on the English drill, and has the benefit of being sanctioned—in fact was brought very much into notice by Major Jones, President of the Newcastle Agricultural Society. With three horses or mules and one man, it will drill ten acres a day—the rows are nine inches apart, and the quantity of seed deposited $1\frac{1}{4}$ bushels. We hope next to see a trial and exhibition of the effect of the “horse hoe”—working the land in early spring between the rows of wheat,—insisted upon in England as indispensable to the highest success in wheat culture. Of that more particularly, we will have more to say, on some early occasion.

A very successful farmer, on one of the best estates in Maryland, and grower of the celebrated family-flour wheat, (we don't see why we may not out with his name) Mr. N. Martin of Talbot, in conversation with him, on the comparative advantages of drill and broad-cast wheat culture said he adhered to the old broad-cast, for he preferred to have his land “left a little rough at seeding.”—He said that under the process of alternate freezing and thawing in spring, the clods melted down, and kept the roots of the wheat from being exposed and the plant “thrown out.” But we apprehend that end is yet more effectually attained by the drill, which opens a trench and

* Their managers are both colored men, we wish we could recollect their names, that we might record them. Both were bought at their own request, lest they might be sold away; and both, to their credit be it said, have evinced their gratitude by faithful devotion, and have learned to be excellent practical managers.

leaves the soil a little elevated on each side, near the plant, and thus at every thawing in the spring these ridges are melted down over the roots of the plant. See on this very point the certificate of Mr. Huey, a practical farmer at Unionville, Chester county, Pennsylvania, in the last number of the *Plough, the Loom, and the Anvil*, where he says expressly, "My land being low, I have *lost greatly by the winter throwing the roots entirely out, which is wholly obviated by drilling.*" He had used Pennock's drill. Let us here venture the request that the Agricultural Society of Talbot will appoint a committee to collect testimony and report on the comparative advantages of the two modes of sowing. And while we are on the subject, we may add, that we learned, in a steamboat conversation with Mr. Robert Jenks, of Newton, Bucks County, Pennsylvania, one of those active-minded farmers, who not only takes pains to learn, but has the enterprise to adopt useful improvements in agriculture and horticulture,—that he found an increase of (we think) not less than seven bushels to the acre by drilling.

On the two estates of which we are speaking, as well as by two of the tenants of Messrs. H.—the wheat-reaper, invented and recently much improved by that worthy, ingenious, and indefatigable mechanician, OBED HUSSEY, is used with unqualified approbation and the most economical effects. With the assistance of two men, drawn by four horses, it reaps, and perfectly saves fifteen acres a day, leaving for the gleaner who would follow after it, a perfectly barren field. The judgment of those who have used it is, that, in a field of fifty acres, it saves its own cost, in a single year, by the double saving of time and grain—and thus presents an appropriate occasion to reflect, upon the "penny-wise, pound-foolish" practice of many, who cannot bring themselves to lay out portions of their crop, large or small, in the *purchase of manures and more perfect machinery.* They are willing to borrow or rob their land of all they can get out of it, but seem wanting in faith or honesty to return any portion of what they extract—forgetting that it would often, even for a series of years, be true economy, to restore to the great machine of production *every dollar of their net earnings.* In doing thus, they are but lending to themselves, and are sure to be repaid with compound interest. Adding from year to year to the value of the land, the farmer increases his security and augments his capital with even more certainty than the money capitalist, who adds interest to principal, in as much as the farmer has all in his own hands, and it cannot be said of land, as of other "riches," that "it maketh itself wings and flieth away."

Thus it is, by examples and influences such as those to which we have referred, that we see land throughout the peninsula, from the Pennsylvania line to the Capes, rising in value, wherever morality attracts and inspires confidence and industry lends the benefit of her example. It may well be doubted whether, in any portion of the Union, the agriculturists that belong to it are better informed in the means adapted to secure increased productiveness to their estates, than are the farmers of the Eastern Shore of Maryland. If there be, as already intimated, some who deny themselves the advantage to be derived from monthly advices, in agricultural journals, of all that is going on to advance the great arts of cultivation and husbandry, they reap the benefit of such advices from daily intercourse with, and observation of the many who wisely make it a point to keep themselves thus posted up; and if, therefore, there be not a more rapid melioration of the soil and average increase of crops, it must be ascribed to other causes than want of knowledge, of industry, and of care. One of these, and a very obvious cause, is the exhausting nature of the crops they cultivate, consisting almost exclusively of grain, all of which is to be sold away at a distance from the land, to which it restores scarcely any thing in the way of remuneration. How essentially

different is the case, where the products of the land are consumed upon the land, and all the fertilizing ingredients from which they spring thrown back upon its bosom, even in more available form, for the ends of reproduction!

In many parts of England, in Cornwall for instance, where protection is given to manufactures, and the loom and the anvil drawn close to the plough, they carry thirty cattle to every hundred acres of arable land.*

But while it cannot be denied, that though there is among the farmers of this beautiful region a lively apprehension of the true means, as well as of the necessity of renovating their estates, and a most laudable, and, we believe, nobly generous rivalry in the race of improvement, the reader must not suppose that the work itself is to them a work of mere amusement; one that will allow the farmer to while away his precious time in talking politics at the cross-roads groggery, or the blacksmith's shop—at the “Trap,” or the “Hole in the Wall.”† So far from that, there is no agricultural community on whom circumstances impose more urgently, both the obligation and the necessity, to convert every material and resource into manure, that they may give back to the land the elements of fertility, whereof it must be so certainly and largely deprived, under their exhausting course of exclusive and oft-repeated grain crops. Two white crops in three years, and the grass crop pastured down, is enough to break the heart of the stoutest land; and the reader may be assured that to keep it up, much more to improve it and augment its crops, however little, “is no child's play.” On the contrary, it demands great labour, and the most assiduous, unceasing care and industry, and sagacious management. One cannot but be struck with admiration, therefore, at the resolution and perseverance by which these “bay-side farmers” are enabled to cover over their whole corn field shift, with manure of some sort, whenever that crop comes round in the three or four shift rotation, being a third or fourth of their arable land. This manuring is done by a resolute system of penning their cattle in the field destined for corn in summer, or in the barn-yard throughout the year, and keeping them well-bedded and supplied with “pine shatters,” corn stalks, cleansing of ditches, sea-ore, &c. If on this “shore” they are cut off, by its want of effect, from that great and most convenient of all renovators, *plaster of Paris*, so cheap and so portable, and which, over a great part of the country, acts with so much energy, (while here it is generally powerless,) they enjoy, on the other hand, the benefit of sea-ore, marsh mud, and marl, and oyster-shell lime—the one or the other, or the materials for it, (and often all,) on almost every farm on the peninsula—for it is the very distinguishing and remarkable feature in the geography of all these counties, that almost every farmer is on the water and has the benefit of a “landing,” within a few hundred yards of his granary. Indeed, but for this, with all their industry, and their laudable watchfulness for the means of economizing labour, and of repairing the exhaustion otherwise so inevitable under such a course of husbandry, which carries all off, and consumes nothing on the land, they would yet have long since been forced to *abandon and give up in despair* this most beautiful portion of the State. Yes, though it may startle at the first suggestion, yet, when we look back at the history of Maryland, her agricultural and popular statistics, we shall see that if the counties of the Eastern Shore had been compelled to transport their produce, such as it has been, to the markets in which it has been sold, the same distance by *land* instead of *water*, the whole country must have been surrendered. As it is, scarcely a

* Mr. H., we observed, kept about twenty on his home estate of 400 acres.

† The names of two towns in Talbot.

farm can be found five miles from navigation, in many of the counties, while for almost all the vessel comes to the door, and the product, whether vegetable, fruit, grain or animal, is put on board and floated off, as on a natural canal, to market, at an expense of four, or at most five cents a bushel, and other things in proportion, for any distance, even two hundred miles. If, then, under these advantages, these eight counties went back more than four thousand, by the official returns during the last decennial period, from 1820 to 1840, where would they have been had they been compelled, as in the interior counties of Virginia, back from tide-water, where they have to pay 15, 20, 25, and even 30 cents per bushel, according to distance, to send their grain over bad roads, retaining only the straw for their cattle, and which, scarcely keeping life in their bodies,) without a single root in the way of medicine or nutriment,) leaves them mere skeletons in the spring, to enter on pastures as meager as themselves.*

Finally, a stranger is forced, on a view of this extraordinary country, to apprehend that, topographically, (being almost and everywhere perfectly level,) it is incapable of being *thoroughly drained*, and that it is too much inclined to run into a condition of great compactness, and is with great difficulty brought to and kept in that *friable* condition, such as the reader will find illustrated by figure 3, page 245 of this volume; and then again, too apt to pass from one extreme to the other, as from the condition represented in that essay by figure 2, to that indicated by figure 4. And this peculiar nature of the soil, expressively called a *pewtery* soil, seems to belong even more to the land in this bay-side district than in other parts of the county. In this, however, we may be mistaken. Were we to venture on practical suggestions for the improvement of the agriculture of this unique and most interesting district of country, intersected in all directions by navigable rivers, and creeks, and coves, and inlets of infinitely various forms, and offering to every one at his door, and without price, not merely a natural canal to all the great cities of the Union, but, for his personal enjoyment, all the luxuries of salt-water,—what should we say further? We should say, in the first place, that having entered upon the use of the drill, we want next to see them try the effect of *horse* or hand-hoeing their wheat. A hand-hoe has lately been invented in England, which (not having the account of it at hand) we will more particularly notice hereafter, and which, if available there in that form, we are quite sure might be used on lands in the state of that of the Messrs. Hambleton's, and of one of the tenants of Mr. S. H., to whom the drill had been loaned.

We have not been, for thirty years, in this sort of intercourse with farmers

* We subjoin the population returns for the eight counties of Maryland alluded to, according to the censuses of 1820 and 1840:—

	1820.	1840.
Caroline	10,041	7,806
Cecil	16,048	17,232
Dorchester	17,755	18,843
Kent	11,453	10,842
Queen Anne	14,952	12,633
Somerset	19,579	19,508
Talbot	14,389	12,090
Worcester	17,421	18,377

Total	121,638	117,331
Loss in ten years		4,307

But we apprehend the next census will begin to tell another tale. This peninsula of all alluvion counties has touched the bottom, and we may hope will continue to rise until she ascends above the highest level she has ever yet attained.

without knowing how much they are inclined to listen with incredulity, if not with derision, to all new suggestions of this sort; but we have lived long enough, too, to see many prejudices overcome, and many a mulish temper become docile, after years of observation of the efficacy and the profit of things which they had at first, with little reflection and less forecast, condemned and ridiculed. Who does not even now witness the dogged obstinacy with which the use of the drill is resisted, just as, twenty-five years ago, we were laughed at for distributing *birds' dung!* and describing its wonderful effects under the outlandish name of *Guano!*

The gentleman, in view of whose management we are writing without his knowledge, and of whom we have already spoken more than he would desire, told us that, by using the drill, 38 bushels of seed-wheat had served instead of 60 that would otherwise have been needed. Here, then, is a positive saving worthy of attention, being nearly one-fourth of the cost of the machine at once, to say nothing of the superior condition of the land when prepared for the drill, to which we have already alluded; but in England they look far and materially beyond these two advantages, from adopting the use of the drill. Hence in the excellent essay in our October number, the *attentive* reader will remember that the writer dwells particularly on the advantage it affords of horse-hoeing, going so far as to say—"The *whole success* of the drill husbandry is owing, *in a great measure*, to its *enabling you to stir up the soil well during the progress of your crop*; which stirring up is of no value beyond its effects in more minutely pulverizing the soil, and increasing, as far as possible, the size and number of the interstitial canals between the particles of the soil, so as to freely admit air and moisture, and to render it more permeable to the roots in their search for food." We should think, also, that the destruction of grass and weeds would be entitled to some consideration. But, at all events, let us, be it upon never so small a scale, see the experiment of *stirring the soil* in spring, between the drills, that we may know the effects, in this country, of that which, in England, is said to be in a *great measure* the cause of the success of drill husbandry. Another thing which we want, adapted particularly to these level *old* fields without stone or stump, is a drill fitted for the distribution of *bone dust*, night-soil, guano, and *other prepared manures*; all of which, and especially bone-dust, we want to see freely tried on these lands. To conclude for the present, (meaning, however, to return to the subject, with a view to some observations on the management of their barn-yards, and other arrangements for the accumulation of manure,) it gives us great pleasure to express our humble opinion, for what it may be worth, that, in the general way, the Eastern Shore of Maryland is in a course of regular and steady, though in the very nature of the pursuit it must be gradual, if not slow improvement. Such is indeed the sure result of amelioration in the habits of the farming community. There is less of the common practices of gaming and frolicking than formerly. No longer can it be said, as it was written of the planters and farmers of Virginia and Maryland before the Revolution, that those "who have the power of being good cultivators of their fields abandon them to the overseers of their negroes, and pursue only their own pleasures." There is observable, every year, a more general disposition to inquire and read on subjects immediately connected with their industry—greater watchfulness for improved implements, improved processes, and new means and materials for manure. *En evant*—go a-head—seems to be their motto; and long may it so continue. In this increasing *thirst for knowledge* and ambition to excel, is the best security on earth for increasing products. Without these, when was any community ever known to improve? Of all guarantees for improvement, the most valid is the abiding consciousness that we have *always something*

to learn! Should Eastern Shore men, or any men, continue to act under that influence, those who live to look back, through a retrospect of twenty-five years, will find their estates as much more advanced upon their present condition as they are now behind what was written of them before the Revolution, when it was said—

“Wheat they sow, as we do in England, in October; about two bushels to the acre, which produces seldom less than 25, sometimes 35 and 40. Rye they do not cultivate much, as their lands are in general good enough to give them good crops of wheat. Barley produces 25 to 40 bushels; oats, from 30 to 60; peas, from 10 to 60; Indian corn, *seldom less* than 50, and sometimes 80. Turnips and cabbages thrive in the greatest luxuriance, and produce crops far beyond any thing we know of in Britain. Potatoes, also, with good management, yield, without any dung, crops much greater than can, in these islands, be gained by the force of manuring: yet are the farmers of these colonies (Maryland and Virginia) most inexcusably negligent in not giving their crops due justice, in *properly* preparing their lands, and keeping them, during their growth, free from weeds.”

What we are inclined to think as to the capabilities of the Eastern Shore, for root culture, and their readiness to go more extensively and profitably into the rearing and fattening of sheep and cattle, is glanced at in the remarks of the writer in “The Baltimore American.” We may extend, to a greater number of readers, whatever of interest these remarks may possess, by following them with the “*table of averages*” given in the Patent Office Report for 1848—the compiler of which says, “in many instances, there was almost an entire similarity in the judgments formed, in the case of the most prominent crops.” How far that judgment is to be relied on, as accurate, every reader will judge for himself. (See p. 363.)

Let him turn to the same document for the estimate of the *expense* of cultivating these crops, per acre or bushel, and he will be prepared in some measure to see what is the *real condition* of the agriculture of the United States, and whether there is not a worm of some sort gnawing at the root of the tree, which is not likely to be exposed, much less killed, merely by forming societies to hold cattle shows, *and conventions to diminish products!* Were such conventions ever held in a country whose agriculture was improving?

The following, from “The Baltimore American,” so nearly presents our own views, that we need say no more of

THE AGRICULTURAL FAIR AT EASTON.

A gentleman who was present says that he has never seen any community more obviously alive to all that can conduce to improvement in their pursuit and condition, than was to be seen then and there, among the gentlemen of Talbot.

Not only did that feeling seem to be universal among the farmers, but it evidently derived the best sort of stimulus and support from their *wives and daughters and sisters*.

The ladies of Easton and the neighbourhood were at the exhibition, not only in strong force of numbers, but in the force of their useful and elegant handiworks of housewifery.

There was an excellent display of agricultural machinery, a most im-

portant feature in all such shows ; but except the very various and very beautiful display contributed by the ladies in the several departments of domestic economy, strictly speaking, the most remarkable feature of the exhibition was the uncommon excellence of the most *important of the vegetable tribes* : the potato, the carrot, parsnip, squash, broccoli, drum-head and savoy cabbage, with others of the brassica family ; and turnips, from Otway," *Col. N. Goldsborough's* farm, cultivated in the open field and in white-oak wheat land, without extraordinary care, and yet of a size almost incredible, for a country in which farmers seem possessed of a notion that they cannot make turnips as they are made in England, eminently subservient, nay, indispensable to the fattening of their bullocks and their land. Some of these turnips would have measured, in their largest diameter, twelve inches. In short, these samples of what the Eastern Shore *can do*, in the way of culinary vegetables, could not be viewed without at once suggesting the idea, that instead of confining their labour, and care, and capital exclusively to two *grains*, to be transported and consumed away, far off from their lands ; is it not the natural destiny of this most remarkable country, to consume their produce upon the land, fattening sheep and bullocks, and with the surplus of their vegetables, supply the great markets of Baltimore, Philadelphia, New York and Boston, sooner and cheaper than it can be done from the colder climates and dearer lands and labour from which these cities draw their present supplies.

DR. THOMSON'S ADDRESS.

But if the visible and physical part of the Easton Exhibition was entertaining and worthy of the farmers of Talbot, the intellectual part of the repast—the *address* of Dr. Thomson, of Wilmington, (in whom, like a true son of the Old Dominion as he is, there is no tiring in the good cause,) was both eloquent and instructive. Though in the full practice secured by his eminent professional abilities, the doctor has for many years been one of the main-springs of that onward movement in the art and practice of cultivation, which has so much distinguished the little State of Delaware, and his excellent address on this occasion fully evinced that his knowledge of the philosophy and the rights of agriculture is equal to his untiring zeal. If the views of all who follow it for a livelihood were equally clear and elevated, they would not be long in making their voices heard and their influence felt in the councils of their country, to the end of creating departments and making appropriations for enlightening, benefiting and advancing agriculture, as well as other interests and institutions for which departments have been created and education provided.

In a feeling of due appreciation of the soundness of his views and the value of his suggestions, the Society moved unanimously their thanks to the doctor, with a request of a copy of his address for publication.

Our informant noticed, what it might seem almost superfluous to add, so well is it known, the characteristic hospitality of Eastern Shore men. Not contented, as in some countries, with "How d'ye do?—I'm glad to see you—how have you been, and fine weather, won't you come and see me?" but an instinctive habit of *hunting out and caring for strangers on the ground*—a cordial shake of the hand—a look full in the face—a hearty invitation to go and eat salt with them. Their house is made your home, in the full and true sense of the word, their servants, their horses and conveyances are at your command—equally ready to "welcome the coming and speed the going guest."

THE PATTERSON DEVONS

ARE called for, north and south, a little faster than they can be supplied—nor is it to be wondered at, seeing the pains that Mr. Patterson takes to breed them in the highest degree of purity and perfection. It is but just that consummate skill and undeviating integrity and elevation of purpose should be thus properly estimated by the agricultural public. There would be, if we may say so, a reconcileability in buying occasionally even an inferior animal, by any chance, from one who takes so much pains to have the best—but easy, as it is not, without speaking beforehand, to get good things from Springfield, it would be yet more difficult to get such as are indifferent: for when such do turn up, under his vigilant eye, the knife is their infallible doom.

We had to-day, Nov. 12, the pleasure to see three fine calves from his unequalled (we believe even in England) herd of Devons on their way to Western New York, there to reassure the blood of Mr. Washburn's Devons, already so distinguished in the agricultural annals of that State.

One of them was the property of L. & J. Burney, young farmers of Otsego township, Otsego county. One may always speak and augur well of the stock and stock-management of those who thus cross the country, without care for distance or expense, to hunt up the very best to be had "in their line;" as these hard-fisted practical farmers have done before, and now again, having taken the precaution to secure these bull and heifer calves, by timely application to their breeder. These young travellers, like some older ones of wide renown, attracted crowds as they moved along. We regarded it as a compliment to have them stop and look in on passing the sign of "The Plough, the Loom, and the Anvil." We should like to see 50,000 Devon oxen in the place of 50,000 out of the 300,000 gluttonous horses which it is the pride of Pennsylvania that she feeds—being 100,000 more than are kept by all the six sagacious Yankee States united.

WHERE ARE THE NATURAL SHEEP PASTURES OF AMERICA?

IN the South. Mr. Rockwell of Michigan, in an excellent practical paper for "The Wool Grower," insists on the necessity of *sheds* to protect the flocks from *cold rains*. He says:

"Thousands of sheep died last winter in Ohio and Michigan, simply for the want of protection from the cold rains in the early part of winter. It is not cold, dry, snowy weather that injures sheep, but cold, rainy weather. Mark that. Let every wool grower provide for his flock some cheap, temporary shelters, (unless he choose more costly ones,) and see that his sheep are driven under them and compelled to remain there during the storm.

The time and expense of this will receive a tenfold remuneration in the well-being and healthy condition of the flock. The thousands of sheep that died from exposure last winter in this State and Ohio, would have enabled the owners to have put up twice the amount of shed room needed for their flocks for twenty years to come."

We are far from wishing to discourage northern wool growers, but there is, in the above, a peg, long enough and strong enough, to bear a strong argument in favour of the superior advantages of southern latitudes. Without having time or adequate knowledge to go into the comparison ourselves, we may refer the reader to the article on "The Nature and Growth of

Wool;”* and here we may ask, whether such articles are not of more real value, containing, as they do, the natural history and philosophy of wool-growing than a thousand items, such as it would be easy to extract from old papers, about the extraordinary weight of particular fleeces. By the by, let us ask the farmer, patron of this journal, who is a parent, whether he puts the numbers into the hands of his son, who is to be a farmer?

SHEEP-GROWING IN NEW YORK.

THE facts stated below certainly indicate great care, and warrant the presumption of consummately good management on the part of the writer, Mr. J. D. Patterson. Give us his practical skill—with Randall's unequalled work on Sheep Husbandry, which any one shall have delivered at his Post-office, free of all charges, along with the Elements of Agriculture, for \$1; and then give us security against sheep-killing dogs, which may be had by the use of good shepherd's dogs, and we would not desire a larger fortune than could be realized in Virginia, the Carolinas, Georgia, in other Southern States, or in Texas or Arkansas, by sheep-breeding and wool husbandry.

T. C. PETERS, Esq.

Dear Sir:—In the August No. of the “Wool Grower,” you published the statement that I sent you, of the weight of the wool taken from the pair of imported lambs that I purchased from Mr. Taintor, at Hartford, Conn., in August last—that of the buck being $14\frac{1}{2}$ pounds, and the ewe $10\frac{3}{8}$ pounds, but at the same time you “protest against the whole system of publishing large yields of wool, without at the same time giving the weight of the carcass upon which the fleece grew.” I will therefore state, for your information, and that of your readers, that the lamb from which I sheared $14\frac{1}{2}$ pounds, weighed the day he was washed, and before he was put into the water, 179 pounds, from which deduct $14\frac{1}{2}$ pound of wool when dry, and say $6\frac{1}{2}$ pounds for dirt, would leave as the actual weight of carcass, 158 pounds.

I do not pretend that the wool of my imported Merino lambs, or my flock of full-blood Merino sheep is as fine as that cut from a flock of full-blood Saxony sheep, but it is quite certain that more fat mutton will be found from a carcass weighing 158 pounds, than from one that will “not weigh as much by two-thirds.”

The health and constitution of sheep I consider important to the farmer; and I will here state that I have never lost one per cent. by disease since I have kept a flock of sheep, and I have never failed to raise more lambs than I had ewes on my farm. Last year I raised 141 lambs from 126 ewes, and I have now 182 lambs from 159 ewes, 73 of which are from the buck imported last year, and you can judge of their size when I tell you that 10 of my buck lambs weighed this day 801 pounds, and 10 of my ewe lambs 680 pounds. They were taken from the ewes about the first of the present month, and in consequence of the severe drought, their feed has been very short and poor since that time.

J. D. PATTERSON.

Westfield, Chatauque Co., N. Y., Aug. 24, 1849.

Large Bunches of Grapes.—A friend, who lately visited the Duke of Portland's garden at Clumber, reports having seen a bunch of Black Hamburgh Grapes of the weight of 10 lbs.; if so, we generally know little how to cultivate even that desirable but comparatively common fruit? Is the thing possible? *G. O. L.* [We do not believe the statement.]—*English Paper.*

* Postponed until our next, from want of room.

ON SHEEP HUSBANDRY IN THE SOUTHERN STATES.

WE have seen nothing so conclusive as to the adaptation of the Southern States to sheep husbandry, as the following, founded as it is on the ample experience of a gentleman of independent fortune, enjoying ample resources of a different sort, and therefore without motive to distort the question, and of a candid and discriminating judgment. We much regret that pre-occupation of our columns prevents us from giving, until next month, Mr. COCKRILL's letter from the Patent-office Report of 1848. We have read it with deep interest, as relating to a question of great importance, and as well fitted to confirm all that has been said in favour of looking to this branch of husbandry as a vast resource in reserve for the Southern landholder. With Mr. RANDALL's more elaborate and yet anywhere unequalled work on SHEEP HUSBANDRY, as a guide, corroborated by the experience of Mr. Cockrill, what young man of any enterprise need be afraid to go largely into sheep-breeding on the cheap hill pastures of our Southern States, or the prairies of Texas—especially when he contemplates the immense extension of our commercial relations, and demand for wool and mutton embraced in the prospect before us?

[From the Banner & Whig.]

Nashville, October 12, 1849.

Dear Sir:—I have just received the Patent-office Report for 1848, and make my acknowledgment for the insertion of my communication on Wool and Sheep.

You seem to think I am decidedly mistaken on the question of value and quality of sheep *here* and in Europe, and in some aspects I have misconstrued and misrepresented “the views of the able writer on German Wool and Sheep.”

I refer to my article, for my views and my objections to the decided preference given to Germany over the produce of the United States.

I contended that the United States was a better sheep and wool country than Silesia or any other *high latitude*, and that as good bucks can be purchased in the United States for \$50, as those in Germany which cost \$1500 or \$2000.

You, as commissioner, adjudged that I am in error, and that Mr. Fleischmann's views are correct. From that decision I appeal, but not to Judge Cranch, who is learned in law, yet not qualified to decide this case. I appeal to men who have studied sheep husbandry and wool-culture for years, as I have done.

Now as you have decided that I am wrong in the objections urged, and the position taken by me, in favour of the low latitudes of the United States against the high latitudes of Europe, I wish to afford you an opportunity of testing the question of *error*, and let us ascertain, by the decision of competent men, whether you or I be in the wrong in this matter.

I am not a betting man, and therefore make no banter to the world at large, but to you who have determined and published that I am wrong, and entirely mistaken in these questions, I make the following proposition:—

I will confine myself to my own flock in latitude 30°, and I will give you all Silesia to select from, which you stand at the head of the continent for a fine and constant character of the fleece, you shall select a buck and a ewe from the most celebrated flock in that German or Prussian province; and I will exhibit against you in the city of Nashville, for any sum from \$50 to \$1500. The premium to be awarded by competent judges to those animals presenting the greatest number of valuable points and qualities, and the best combination of these points for the production of *superfine* broadcloths. Time of exhibition and other details to be agreed upon hereafter.

I fix the place of exhibition, because I give you all the flocks in Silesia to select from, but you are not to come south of that latitude, being about 51° north, in making your selections.

I have said that the low latitudes are superior to the high ones, in wool-culture, and I wish an opportunity of showing to others that I am not wrong, and not mistaken on this subject.

I remain, very respectfully, your obedient servant,

MARK R. COCKRILL.

Hon. E. BURKE, *Washington City.*

GRUB IN THE HEAD OF SHEEP.—HOW TO PREVENT.

MR. S. B. ROCKWELL, of Michigan, says:—

It is an old adage, that an “ounce of prevention is of more value than a pound of cure.” The truth of this remark has been strikingly verified among Vermont farmers within the last few years. Once they waited for disease to show itself in their flocks, and then endeavoured to apply a remedy. Now they forestall disease by applying the remedy in advance. Once a year, just before winter commences, it is customary to inject a solution of Scotch snuff up the nostrils of each sheep in the flock. This is a sure preventive against grub in the head. One man provided with a syringe, with two hands to catch and hold the sheep, will medicate from six to eight hundred in a day. The fall is regarded as the best time. All flocks treated in this way have invariably escaped this dreadful scourge. Fouls or foot-rot is successfully treated with a solution of blue vitriol and spirits of turpentine. The itch or scab, in its worst forms, I have seen yield its virulence, and disappear wholly by feeding freely of sulphur, and applying unguentum to the parts affected. Let those who are just commencing the business of wool-growing pay proper attention to a few simple rules, and success will crown their efforts. Above every thing else, they should see that their flocks are driven under shelter, (else they will remain exposed,) and kept there until the rain and sleet has passed, and the storm abated. Sheep love the rain, and prefer to be in it: and when succeeded by mild weather, it is healthy, but when followed by freezing winds, it is highly injurious, and should never be permitted. Every thing indicates, that for the next ten years, the wool-growing interest will be the great leading interest of our country.

The rich and productive soil of Michigan, with her mild winters and facilities for a good market, holds out strong inducements to her enterprising inhabitants to make wool one of the great staple products of the State. The time is not far distant when this branch of agricultural pursuit will be second to no other in the West, and when she will eclipse the Eastern States in the size of her flocks and quantity of fleece. It is now supposed by competent judges that Michigan has already over one million of sheep, and in successful hands will soon exhibit thousands of fields, covered with extensive flocks of the Merino, furnishing not only a supply for several millions of looms and spindles propelled by her own waters, but also a large amount for export to other sections of the Union. No branch of business promises so good a return for the labour and capital invested, and none more congenial to the feelings of the American farmer, than that of a scientific and successful shepherd. Success to this enterprising State, in this laudable and lucrative branch of agricultural wealth.

Trees.—A solution of lime-water and turpentine, not only prevents trees from being barked by the beetle, but also at the same time prevents them from being attacked by the fly.

THE FARMERS' NOTE-BOOK.

THE PROGRESS OF AGRICULTURAL IMPROVEMENT IN THE WORLD may be imagined from a single fact. In the "Farmers' Letters to the People of England," written in 1768, the author says that in a journey through many counties of England, "I found, upon inquiry, that scarce a plough moved without four horses to draw it—generally five, and frequently six." Now, Professor Mapes, with a pair of horses, drives his sub-stratum plough, we understand, twenty inches deep as a common thing, and that through "clay;" and, if we recollect, his span of oxen cut a furrow of sixteen inches wide, and between two and three feet deep. It is therefore evident that there must be, as every one knows there is, great improvement in the form of the plough, and perhaps, too, in the strength of horses—as there certainly is, as cattle are at least fifty per cent. heavier, on an average, than at that time.

But there are those who think us not entitled to claim credit for quite *all* the discoveries and improvements we boast of. In essays on husbandry, one hundred years ago, it was contended that TULL had no right or even pretension to claim the invention of the drill-plough, which was then said to have been in use in European countries half a century before Tull put pen to paper. Nor, as it was then asserted, did England owe to him the field-culture of turnips, but to the Flemings, a century before.

Folding sheep and wheel-ploughs were thoroughly known in England in the reign of Henry VIII. Nay, says the author to whom we have referred, in here and there an instance, our industry has been inferior to that of our predecessors, or at least it may be observed: *Priscorum aut cura fertilior aut industria slicitior fuit*. "We plough less and sow later than they did. Marl (the most lasting and cheap of all the manures, which may be found in numberless parishes throughout this kingdom) is known and used much less at present (before 1768) than in the two preceding centuries. In a word, few manures of much consequence have been lately discovered, except peat ashes, the sowing of which is confined within a circle of twenty miles diameter throughout, (of more or less valuable kinds,) is to be found in most counties of our kingdom."

But it may gratify those whose pleasure in agricultural reading leads them to look beyond its mere dry details of pounds and pence, bushels and pecks, into its history and literature, that we should for their use record the following

TABLE of the mean price of Wheat in London, at several periods, for the space of 169 years, prior to 1762.

	Years.	Price.				Years.	Price.		
		£	s.	d.			£	s.	d.
From 1594 to 1612	19	2	2	5½	}	69	2	8	5½
1613 — 1637	25	2	7	4					
1638 — 1662	25	2	15	8					
1663 — 1687	25	2	5	3½	}	25	2	5	3½
1688 — 1712	25	2	8	5½					
1713 — 1737	25	2	0	7½					
1738 — 1762	25	1	18	2¾	}	75	2	2	5½

AN EASY RULE FOR FARMERS.—A correspondent of the National Intelligencer thus corrects a paragraph which is going the rounds of the press, giving the mode of computing the English quotations for a quarter of wheat into American measurement and currency:—

"The 'quarter of wheat' is one-fourth of a ton. (2240 pounds,) or 560 pounds. The standard bushel of wheat is not the 'Winchester' bushel, but one-eighth of 560, or 70 pounds. Now, in our country, the bushel of wheat

is 60 pounds: therefore, divide 560 by 60, and the result, or nine and one-third bushels, will be the equivalent, according to our standard, for the English 'quarter of wheat.' But, to make this available to the farmer, let him divide the price per 'quarter' in sterling shillings by nine, (instead of eight,) and multiply the quotient by twenty-four, for the price per bushel (American) in cents. Thus, at 54 shillings per quarter, 54 divided by 9 being 6, which, multiplied by 24, gives \$1.44 per bushel."

YET MORE OF PEAT CHARCOAL AS A DISINFECTOR AND FERTILIZER.

SINCE the long article, as we fear some readers may consider it, on "*Night-soil and Irish Peat Charcoal*" was cast by the stereotyper, we have received the account of another meeting in London, at which very interesting, and, if we mistake not, for the American farmer, very important disclosures were made, by Mr. Rogers, as to the *absolute fertilizing power of peat charcoal* particularly, and of itself. We shall give the whole of that explanation in our next, in the full persuasion that, in many parts of the United States, there exist beds of peat that may be, with great profit, used first in barn-yards, and other more offensive deposits of excretæ, besides being applied alone, and directly, as a manure. To reconcile the reader to the space already yielded to this subject, we must so far anticipate the supplemental expositions by Mr. Rogers, as to give the following short extract from them, which will be re-incorporated into the whole article intended for the January number of this journal. We look on this subject as one of great interest, probably to readers generally, but certainly to all in Massachusetts and other *peat* countries.

In the mean time, we invite from our readers communications as to deposits in our own country of peat, such as it may be supposed would supply a material of like value. And here we take leave to suggest that some farmers on the tide-waters of the Chesapeake Bay, on which there are so many wide margins of worse than useless marshy grounds, should see whether, on being dug and dried, the substance of these marshes might not be carbonized, as in kilns of wood, and used with a profit in their barn-yards, or at once in their fields.

If the "*American Institute*," so called, with its ample means, were not any thing but what it professes to be, and, with its means, ought to be, it is there that the farmer might send such substances with assurance, not of a newspaper puff, that such a thing had been received, and that some pedant had pronounced a learned discourse, or read some outlandish translation at the meeting; but they would have a *thorough analysis* made at once, by *competent men*, of real science, adequately and fairly remunerated for the trouble and labour of doing it, and would publish the result as other New York County Agricultural Societies do, through the *transactions of the State Society*.

For want of some better and assured means, if those who will be at the trouble of carbonizing some of our peat, will send specimens of the coal to us, we will appeal to a really scientific and public-spirited association, the Society in Philadelphia, "*for the development of the mineral resources of the United States*," under the Presidency of P. A. BROWNE, Esq.; an association, by the by, which should be patronized, and whose meetings would well reward the attention of all young farmers in the vicinity of Philadelphia. But we are trespassing on the little room that is left for the extract

from the second meeting in London on the subject. For those of the first meeting, the reader is referred back to page 337 of this number :—

"I then stated what I do now, that the fertilizing power of peat charcoal can scarcely be over-estimated. It acts upon all that the soil produces—*I except nothing*: and, to use the words of Dr. Lindley, in reply to a correspondent, (although the learned doctor was at first a doubter,) '*Use it for your onions, but it is good for every thing.*' (Hear, hear.) My own experiments have proved its value beyond a question, but I shall give you a few particulars of those made by two gentlemen of large landed property in Ireland, who, immediately after my first publication on the subject, entered into correspondence with me, and closely followed out my proposition—Henry Newton, Esq., Mount Leaster, county Carlow, and James Russell, Esq., Dunlively House, county Donegal—and I beg to say that both were strangers to me until my publications came before them. Mr. Russell commenced his experiments in 1846. He tried it with all the usual farm produce except wheat, with uniform success, and as a top-dressing for grass land he had fully borne out all I had stated in that respect; but his trial on a field of four acres with potatoes in 1847, was very remarkable. They were planted in ridges, or, as termed here, 'lazy beds,' one-half the field manured with farm-yard manure, the other with peat charcoal only, about a handful thrown on each seed. The result was more than a double crop from the charcoal; and he informed me that he was himself so astonished at the fact, that he requested Lord Donegal to see and vouch it. At my suggestion he planted oats the next year on the whole field without any further manure, and he assured me the increase on that portion manured with charcoal was nearly in the same ratio as the potatoes. Now, what is the cause? Simply this. The charcoal lay on the land throughout the winter. Every shower of rain that came brought it ammonia and common salt in abundance. This continued for the winter months, and when spring came, every grain was rich in nutriment, while it held moisture besides, to give it to the seed at once, and stimulate it into growth. Mr. Newton was most anxious to tell you these facts himself, but he arrived in London too late for our last meeting. He brought potatoes, of which I will tell you the history. In February last he planted a large field in drills, manured as usual, not then having charcoal; but in April he got some, and, before the potatoes being earthed, he top-dressed a few yards at the foot of all the drills as far as he had charcoal. He authorizes me to state that the result was not only very nearly a double crop, but that there was not a taint in one of them, while all the rest of the field was more or less diseased. (Hear, hear.) I regret extremely that he was unable to wait for the present meeting; but he also authorizes me to say he has now a crop of Swede turnips that cannot be exceeded, to use his own expression. Yet they were not sown till June. No rain came for a month after; all the crops in his neighbourhood failed, and his were only manured with peat charcoal. In short, he has fully proved its value for all plants; like me, he excepts nothing. But I must tell you his reply to my inquiry as to his experience of its value for grass land. He said, 'Nothing can exceed it; and there is little or no labour in using it.' My friend Fenwick swears by it, and he declares he will write his name on the best grass in the country with *black* charcoal, and it will be the *greenest* part of the field in ten days."

It would be a useful item in the statistics of our States, (to collect which there should in each of them be a bureau established,) to know how much there is in each of bog or peat land, as well as in upland waste, and timber land. The estimate is 5,000,000 of acres of such land in England and Scotland, and Ireland. In our country, as in others, the space within which such land lies, convertible into peat charcoal, must be limited to the Northern States. In Southern States, where the decay of vegetation and evaporation of stagnant water are so rapid, the laws of meteorology and chemistry forbid the formation of peat bog.

The range of temperature necessary to its formation in Europe is found to be between the parallels of from 40 to 55 degrees of latitude. We respectfully appeal to our northern friends for information on this point.

To Preserve Timber from Fire.—Impregnate it with a solution of one lb. of arsenic, six lbs. of alum, and ten lbs. of potass, in forty gallons of water.—*Vernet's Patent.*

THE LATE MARYLAND STATE FAIR—AGAIN.

WE had prepared a hasty review of some matters that occurred there, which, though of local origin and interest, are in their nature, or are susceptible of being made general in their application; but we have not room for them now, and, perhaps, before another month, even the little interest our remarks might possess for the public will have passed away, with things more worthy to be remembered. On the most prominent incident, the appearance there of our patriotic chief magistrate, we had remarked that it was, in the first place, especially gratifying to witness his presence, and to hear him declare, (and we honour him for our belief in the perfect sincerity of his declaration,) as to the Fair,

"It presents to me scenes and associations identical with the best interests and permanent prosperity of your distinguished State, and of our common country, and is *much more consonant to my feelings than the recollection of those military events, in which it was my lot to participate*, and to which you have been pleased to refer."

We sincerely trust, for the honour of our country and of human nature, that it may be in the power of the honest historian to say, with truth, that the American people were prompted to honour and to exalt him more for his clemency in the hour of victory, and for his abiding *love of peace*, than for his success in war, so much the result, as that unquestionably was, of his indomitable personal firmness, and of his knowledge of the men he had to command and to meet. For ourselves, we are free to declare that we would not give one good, smooth-running centre-draft plough, for all the swords that ever were stained with human gore.

What was farther admirable, on the part of the people, on this occasion, was their considerateness in not rushing upon their chief magistrate with vulgar or sycophantic importunity, but leaving him, as true politeness as well as common decency required, to pass along in quiet examination of what was most worthy of regard; coming on the ground unostentatiously as he did, not as President of the United States, much less (what, we hope, *he* would despise) as "*his Excellency*" the President of the United States; but as a gentleman planter and practical cultivator himself, wishing only to see whatever might be found most curious and valuable. So may it ever be, let the chief magistrate be of what politics or party he may.

THE ADDRESS,

By the Hon. J. A. Pearce, was eminently perspicuous and practical; crowned and ornamented with as many and as choice flowers of rhetoric as were suitable for the subject and the occasion, so that it commanded the evidently gratified attention of his many lady auditors. Himself an extensive farmer, mingling with the practice much zeal and eager watchfulness for whatever may render the pursuit more elevated in a moral, as well as more profitable in a pecuniary view; any discourse pronounced by him to such an assembly, could not fail of the best effects. We had ourselves the pleasure to *hear* enough of it to excite the hope of *seeing* it in full, and more deliberately studying and profiting by its valuable suggestions.

☞ The Society decided to overlay a resolution which had been passed, to humbly petition Congress for some of the public lands, (which are being squandered by millions of acres,) for the establishment of institutions for instruction in the art and science of Agriculture! Any amount for *military*, but not a dollar for *agricultural* schools!!!!

THE TARIFF—AND THE USE OF OXEN IN THE SOUTH.

It is not so much for its approval of our course, in the South, gratifying as we admit that to be, that we publish the following, as it is for the very *important fact it discloses* as to the capacity and adaptation of a particular breed of *oxen*, to the heavy labour, even of that climate. For ourselves, we have long believed, that man will in vain endeavour to introduce and force things upon climates and countries not adapted to them, expecting them to succeed, and improve in the characteristics they possessed in their indigenous locality. Nature must be consulted, and she may be humoured to a certain extent; but she *will not be forced*. She will make things conform to her fixed laws. The mountains will incline cattle to middle size, long hair, short legs, and active thrifty habits, and so invite the Devons, already so made to their hand. The blue grass pastures of Kentucky, and the river bottom corn lands of Ohio, call for the improved Durham, but they will degenerate unless much skill be practised in the selection of breeding stock. It will not do to breed from every thing that is calved, merely because its progenitors were costly, or of high blood; and there is the danger of constant degeneracy in our country, in breeding from the refined, artificial-made breeds of imported animals, coming from England. We find this letter, as we doubt not the reader will, of the deepest interest, and why? because it communicates *facts* and conveys information of important bearing on a topic of *very great and very general importance*—the extension of *economical ox, in lieu of horse power!* a subject to which we took the opportunity to invite the Pennsylvania farmer's particular attention on the occasion of a late address to the Bucks County Agricultural Society.

We recollect noticing particularly, and with admiration, this old Spanish stock, commonly known as the "Opelousas cattle," when we have been, where we sincerely wish we could be more and oftener, in Mississippi. They are made for the country, and the country for them. Who, after reading this letter, will continue to say "oxen cannot stand the heat of a Southern sun?" We should be proud to give the name of the writer, on account of what he says of the course of "*The Plough, the Loom, and the Anvil*," if his letter did not seem to forbid it. Who knows but some of these days, fortunately for us, we may meet and discuss these matters toe to toe? Accident has delayed the publication of the letter until now.

Near Natchez, Sept. 15, 1849.

DEAR SIR:—Please find enclosed \$10 in Louisiana Bank paper, with which I desire you will credit my subscription to your valued "*Plough, Loom, and Anvil*." When I called upon Mr. Fallon, your agent, I found he had remitted, and that my name was not in the list sent him for collection. I find my last payment was in July 1847, of \$10 to "*American Farmers' Library*," so that I must, ere this, have been in your debt. In future, please send my name before subscription is due, to your agent, if you regard the remittance in that way most satisfactory.*

Allow me to express my hearty concurrence in the views as regards our tariff, which your journal so ably and clearly vindicates. In common with *very many cotton planters*, I have long ardently desired to see, a powerful manufacturing interest built up in our own country, so that a great "home market" for our raw material might secure us from the effects of the bankruptcies, the bread-crop failures, and the political commotions of European countries. What stronger tie, too, than this, to bind these glorious States in harmony and union. That your journal may receive ample encouragement from the South as well as the North, is the wish of

Your obedient servant, ———

P. S. I recently have been looking over a volume of "*Memoirs of the Pennsylvania Agricultural Society*," with which your name is connected as publisher, 1824. It abounds

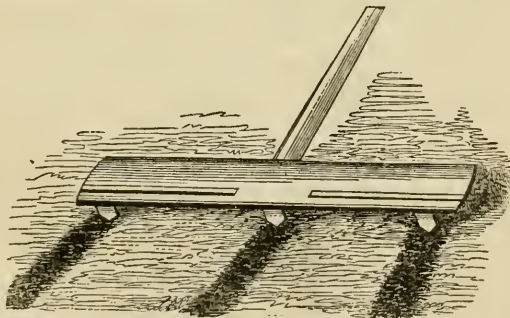
* The most satisfactory remittance, in all cases, is by mail at our risk and cost.—Ed.
P. L. & A.

with essays and articles of interest to the farmer and planter, some of which, I modestly think, you ought to give to the readers of the "Plough, Loom, and Anvil."

My attention has been directed a good deal of late to the subject of ox-labour, and their value to the planter for the draught, even in ploughing. That they will bear, without great suffering, exposure to our hot sun in summer, I am convinced. During several summers past, I have had about fifty yoke employed in hauling cord-wood from the swamp, (upon a river plantation,) to the river's bank. The distance hauled, would average four miles to a trip, and four trips a day (sixteen miles) has been the task—the half of this distance was along an unshaded river bank, where the heat in summer is intense. Now, in several years' experience, I never knew a team of oxen, properly cared for, and suitably fed, to fail in accomplishing the above task. I had a team of large and strong mules to assist in this work when I began it; I found the mule team gained but little in time in making a trip, and never to the extent of making an additional load over the ox-teams. This was often tried, but in every instance failed. In the summer of 1847, my ox-teams hauled out four thousand cords of wood, and from early spring until fall never lost a day, (Sunday's excepted,) nor a trip that I know of, from heat or any other cause. These cattle were fed principally upon well-boiled cotton seed, or, in seasons when the corn crop was abundant, upon ground corn, or rather upon corn, cob, and shuck, which I have a mill for grinding. This latter food I found was improved by being soaked with *slightly* salted water for twenty-four hours or so, before feeding. The reason why this hauling is done in summer, is, that our swamp roads in winter are impassable for hauling, owing to the heavy and continued rain which falls in that season of the year. My oxen are all of the old Spanish stock, commonly known as the "Opelousas cattle." They are small compared with our modern Durhams, but strong, fast-gaited, raw-boned, (they never fatten well,) and having large wide horns; a judicious crossing with the wild herds of Texas would no doubt give larger size and strength to the common draught ox of this country, and give us an animal suitable for ploughing even in summer. I mention these facts to you, as I see you are calling attention to the draught ox, and what I have thus hastily written is not with a view of seeing my name in print, (which I beg you will omit,) but to give you facts which you may rely upon, hoping they would not be uninteresting to you. With great regard, I am again, yours, &c.

NEW DRILLING MACHINE.

HAVING in vain attempted to procure an instrument to supersede the old plan of making drills with the line and hoe, I constructed, this spring, a rough machine, something after the fashion of the accompanying model, which answered the purpose remarkably well. The teeth may be made



movable, or more may be introduced, as required; at each end there is a guide to run out for marking the distance from the last drill. It is weighted at the top, and drawn along the ground by a man, followed by two or three children, dropping into the ground either beans, peas, parsnip, carrot or turnip seed. The drills are filled in with a rake. Two men and two or three handy children may sow an acre per diem, at a cost of five or six shillings. It can be made of either iron or wood.—*Falcon.*

ON THE PECULIAR AGRICULTURAL CIRCUMSTANCES OF THE UNITED STATES,

AND THE POLICY THEY ENJOIN.

THERE are some men whose minds are like great stagnant pools without any living spring. They have both disposition and capacity to amuse the vulgar, with endless volubility of speech, and with such, to pass themselves off for prodigies of knowledge; and yet, when you come to set away, to settle, all they have said, like still-fed cow's milk, you can neither skim nor drain from the effete mass any thing really new or substantial, much less any thing rich. There are, on the other hand, some whose minds seem to be of an ore, so pure and exempt from all rubbish and alloy, that whenever you touch them, they ring like the purest metal, and in all they say you can detect nothing confused or superfluous—all is to the point—all is useful as well as original. Such is the character of whatever reaches the public from such men as *Calhoun* and *Webster*; such, we should judge from what we have seen of his writings, is the character of the mind, the acquirements, the course of research, and turn of thinking of *Lieutenant Maury* of the Navy. In keeping with whatever else we have seen from him, was his speech at the late Memphis Convention, from which we have room only for the following extract, selected because it has a direct and important bearing on the *agricultural capabilities and policy of the United States*.

Let us for a moment consider the commercial advantages which we derive from the course of our rivers, and from the geographical position of that wonderful ocean basin which is composed of the Gulf of Mexico and the Caribbean sea. They are in truth the Mediterranean of the New World. A river which runs north or south crosses parallels of latitude, and consequently passes through various climates; therefore a variety of productions is to be found along its banks, and assortments of produce are delivered at its mouth to be borne across the ocean by the wings of commerce. The Mississippi river crosses more parallels of latitude than any river in the world, and therefore we find in its valley a greater variety of agricultural staples than on the banks of any other river. We have wheat and corn, hemp and tobacco, provisions, cotton, sugar and rice, with a vast variety of articles of minor importance.

A river which runs east or west crosses no parallels of latitude: the same climate which exists at its mouth is found at its source, and there is no variety of agricultural productions along its banks. In this fact we see one of the great sources of commerce and wealth afforded by the Mississippi river. A sea, commercially speaking, is important in proportion to the extent and climate of the back country by which it is drained, and in this point of view there is no part of the wide ocean which is comparable to this Mediterranean sea in our midst. It is midway between North and South America; rivers that run from the northern and southern hemisphere empty into it; in their course they cross *severely degrees of latitude, and embrace all the agricultural climates of the world*. The back country drained by these rivers is greater in extent than all the back country that is drained into the Mediterranean of the Old World, added to all the country which is drained from Europe into the Atlantic, and all that is drained from India into the Indian ocean. There their rivers are all in the same hemisphere, and they have but one harvest during the year; here our rivers rise in both hemispheres, and we may have a harvest every six months. There they have to sail twenty thousand miles to exchange the products of one river basin for those of another in a different climate; here we can do it within a distance of two thousand miles. There it is as much as a ship can do to make one voyage in a year between their remote river basins; in the same time here one ship may make ten voyages between our remote river basins.

What is it that has caused the nations of Europe to attach so much value and importance to the commerce of the Indies? It is because the river basins there lie in latitudes which are not found in Europe, and which therefore supply commerce with staples that

are not produced there. All the supplies that are to be found in the river basins of Europe and of India, with the exception of mere spices, abound in far greater profusion in the magnificent system of the New World. As before stated, this Mediterranean sea is midway between the two Americas. Only give us, therefore, a commercial highway across the isthmus, and we make it the commercial centre of the earth. It will then stand midway between Europe and Asia.

Now can any man contemplate the facts here stated, without at once perceiving, that as our resources are so much more various and abundant than those of any other country on earth, yielding all the elements of independence and of prosperous "free trade" within ourselves, that therefore our policy should be correspondingly peculiar? Rivers empty into the Mississippi that cross seventy degrees of latitude, embracing all the agricultural elements of the world, "therefore a variety of productions is to be found along its banks, and assortments of produce to be delivered at its mouth, to be borne across the ocean by the wings of commerce!" Yes, but in what state and for what purpose are these raw productions to be borne across the ocean? To be fashioned into ten thousand forms by 100,000,000 of steam horses in England, the profit on the manufacture adding hundreds of millions annually to the wealth of English aristocracy; and having performed that office, to be sent back to us, and to all parts of the world, with their accumulated cost of double transportation to the American consumer? Why not do all that fashioning of the raw material, to the very last touch of art, and keep the profit of fashioning as well as of producing to ourselves? How long will the plain common sense of the cultivators of the soil be humbugged by office-seeking and office-jobbing politicians! Are the people of the United States mere swine, before whom God has thrown these pearls? Verily it looks too much like it!

HEREFORD CATTLE—SHORT HORNS AND DEVONS.

Is it that the Herefords imported into the United States, first we believe by Mr. CLAY, and since in larger numbers, if not great perfection, by Mr. CORNING of Albany, have passed into so few hands, and they so little in the way of puffing their wares, or how is it, that we see so little said of them? In England they make a strong and persevering stand against the other breeds.

In a late number of the English Farmers' Magazine, we find the following bold challenge from the Hereford to the Short Horns and Devons. Come, gentlemen American owners of this beautiful breed of cattle, back up Mr. Smythies, and don't allow yourselves to be *cowed*.

I hereby offer to show four Hereford steers, whose ages shall not exceed two years and three months, and four whose ages shall not exceed one year and three months, at the next Smithfield show in December, against eight shorthorns and eight Devons, of similar ages, for a sweepstakes of one hundred sovereigns for each lot; with this stipulation—that each lot shall have been bred by one man, and that they shall have lain at grass at least four months this summer, without having had any thing but what they got there. As Mr. Keary has asserted in his *Prize Essay* that it takes ten months longer to make up a Hereford than it does a Short Horn, I must labour under a great disadvantage; however, I will take my chance for that. I think, sir, I have a right to expect that this challenge shall be accepted, or that we shall hear of no more *Prize Essays*, containing such unfounded and calumnious assertions. But this is not all. I am willing to test their hardiness

as a breeding stock, as well as their feeding properties. In order to do this, I propose to turn my two-year-old heifer, which gained the first prize at Norwich, into a pasture with the two-year-old Short-horn and two-year-old Devon heifer, which obtained the first prize in their respective classes, and let them remain there till the next meeting of the Royal English Agricultural Society at Exeter, next July, giving them nothing but what they can get, except a little hay from the 5th of November till the 5th of May; the heifers to be shown at Exeter for a sweepstakes of a hundred sovereigns each. But in case the owners of either of the heifers should object to the amount of the stake, I am ready to show them for nothing, if the society will consent to give a cup to the winner; and I do not know how they could lay out their money better, for this is a question of the utmost importance, and one that ought to be decided as early as possible, and can only be settled by the animals being brought into close contact in the way I propose. If any Short-horn or Devon breeder can point out a fairer way of testing their respective merits than the one I have proposed, I shall be ready to meet him in any way he likes. I am not nice to a shade how the experiment is tried, so that the animals are brought fairly into competition with each other. I hereby declare that I am ready at all times to produce Hereford beasts against any other breed in the United Kingdom, either as rearing or feeding stock, and to back my opinion. I suppose, after having seen Mr. Hobb's cow and my heifer at Norwich, Mr. Keary will allow that there are such things as *gray* Herefords, though he did not happen to know it before.

Before I conclude, I must beg to give a word of advice to my brother graziers. If they are desirous of trying Hereford bullocks, let them go down to Hereford fair, on the 19th of October, when they will see the finest show of bullocks the world can produce, and there they can choose for themselves, and not trust to buying them of jobbers, who buy a cheap sort, chiefly bred in Radnorshire, out of Welsh cows, and bring them up into the country where the breed is little known; and by this means they are led to form an unfavourable and unjust opinion of the breed, probably never having seen a good-bred one in their lives. My only object, Mr. Editor, is to establish the truth, and to show to the farmers of England what is their real interest,

I remain, your obedient servant,

J. R. SMYTHIES.

East Hill, Colchester, September 18

Bones and Acid.—To those who dissolve bones in sulphuric acid, I beg to communicate a method I have now, for the second season, adopted with success, whereby I make very short work of an otherwise troublesome job. Under cover, either in a manure barn or cart shed, I make a clay basin or trough, 20 feet by 10, with edges 20 inches wide and as high, into which, having previously thrown 100 bushels of half-inch bones, and having damped them, I pour from the carboys 1700 lbs. of acid: the contents of each carboy being marked by the maker, I have not the trouble of weighing. As soon as the requisite quantity of acid is poured into the trough, two men with common iron road scrapers or long iron rakes, commence stirring, continuing so to do until effervescence subsides, two hours completing the work. I leave the mass for 10 days, when, by the addition of sufficient water, I bring the whole to the consistence of a thick gruel, cinder dust being then added as usual.

W. S.

THE AMERICAN INSTITUTE.

WITH this establishment, except in its agricultural pretensions, we have no concern. In that relation, it would be easy to show it up as boasting more, and making more parade, and doing less, managed as it has been, than any public institution of its means in the world.

The fact is, the Legislature ought, and we believe will *excuse* it, from all connection with the *agricultural* interest of the State. If New York county has, as an *agricultural* district, claims on the patronage of the State, as we doubt not it has, let it have an Agricultural Society of its own, be placed upon the *footing of other Agricultural Societies*, and ranged under the State Society, as all the other counties are. What have these old gentlemen of the city, who find an agreeable lounge in the Institute, to do with the agricultural interests of the State? How much has its agriculture been put forward by translations "by him," from outlandish tongues and countries? Let a society of *bona fide* farmers of the county of New York be formed as in other counties, and practical men put at the head, and in the body, and at the tail of it, and let what there is of *pith and marrow* in their proceedings be extracted and incorporated in the transactions of the State Agricultural Society, and let the Institute give its "*Trans.*" and its "*Dips.*" to those who can be so paid for helping them to get up, every year, a new show of old trumpery. Of their management of the Institute, in its legitimate sphere, the encouragement of the *useful arts*, and to accelerate and illustrate the progress of *useful domestic industry*, the reader may gain an idea by perusal of the following, from a paper of deserved circulation and influence, on the spot, in which, we believe, it speaks the sentiments of the New York public, if they could find utterance—so far as the public cares any thing about the Institute—*managed as it has been*, which we certainly do not, except that it is, as far as agriculture is in the question, grievous and deplorable to see so much means without utility, and so much pretensions without merit.

[From the New York Dry Goods Reporter.]

The American Institute.—We are very glad to perceive that our notices of the Annual Fair of this institution have been extensively copied and universally commended; not because of the compliment to ourselves, but because it shows the general interest which is felt in what should be the principal object of the exhibition—the encouragement of home progress in the useful arts. The more we reflect upon the meagre show of the most important fabrics, and the trifling consideration bestowed upon those plain, useful productions which were exhibited, the more strongly are we convinced that some reform in the management of this institution is absolutely essential to its prosperity. It made our cheeks crimson with shame, to see the triumphant glances bestowed by some foreigners upon the dry goods portion of the exhibition. After all that has been said of the progress of American manufactures, to see so few mills represented at this Fair must have been painful to all who have the interest of the country at heart. We could not at first account for it, and were disposed to condemn the want of spirit on the part of the producers. But when we saw the treatment which those fabrics which were presented received of the committee; when we saw meritorious articles passed by with slight commendation, or entirely overlooked, simply because they were the every-day productions of a mill employed upon the useful rather than the ornamental, we were no longer surprised at the backwardness of exhibitors. There is a story going the rounds of all the papers, of a little boy, in his first visit to church, who clambered upon the back of the pew the moment the organist commenced playing, and, when urged to sit down, cried out, to the great annoyance of his mother, that *he would not, he wanted to see the monkey!* His sole pleasant association with the organ was connected with the street exhibitions, and he did not care for the music. The managers of this Institute, thinking perhaps that children of a larger growth might have the same propensity for sight-seeing, have made the monkey part of

their exhibition more and more prominent every year, until mere *show* seems to be the paramount object of their Annual Fair. The question is not so much one of merit as one of display, and thus the plain, the simple, and the useful have been thrown into the shade by a child's dress glittering with fancy thread and gold lace, and a piece of cotton cloth has no chance beside a tinselled doll in a gilded case.

WOOL DEPOT IN BALTIMORE.

Baltimore, 11 mo. 2d, 1849.

RESPECTED FRIEND, J. S. SKINNER,—On my return to the warehouse, I found thy letter, requesting my opinion on wool, &c. As far as my observations have extended, I feel willing so to do, and may notice thy remarks on my establishment are correct. The crop of sugar at first gathered but few flies; but I found every succeeding year has increased their number; and I hope, by strict attention to that branch of business, and at all times will give a fair price, to offer every inducement to the wool-growers of the South to make Baltimore and my particular location a desirable depot for the produce of their flocks; it will save them considerable expense and trouble they have necessarily incurred in going north.

Our farmers must be protected by a law against dogs, or their labours will prove unavailing. I hope it will claim more of the agriculturists' attention, to petition the Legislature; and if they could succeed in getting a law passed, like one they have in Pa., it would be one of the first steps for their encouragement.

We may consider Maryland one of the Southern States, and my opinion is, she has many advantages of turning to good account, for the profitable raising of that commodity; many fine streams on which factories could be erected to work it all up. Bringing together the plough, loom, and anvil, would greatly enhance the prosperity of our State.

My letter, at this time, will be brief; but, some future period, intend giving thee my views as to other questions.

Remain thy friend,

JAMES BAYNES.

We rejoice, let us repeat, at every, even the smallest sign favourable to the enjoyment, by the Southern States, of a great resource in their wool-growing capabilities, from which nothing cuts them off but that supineness which no other industrial class on earth would permit to stand in the way of such a great and certain means of prosperity. Maryland ought to realize from sheep husbandry an addition to her present income of at least \$100,000 annually, clear of all expenses—and other Southern States in proportion. There is this to be said for it—that its prosecution would involve no or very little diminution of the area appropriated to grain and cotton culture. And then what business needs so little capital to commence upon, or so little of additional capital for its conduct and management, as sheep husbandry?

Why don't agricultural societies in the South arrange some of their premiums to promote care and skill in *shearing sheep*, and in the washing and management of the flocks and the fleeces? It would, in fact, be highly useful to get up associations *expressly* to extend and improve the sheep husbandry of those regions. There is tact even in rolling up a fleece, which manufacturers understand, and much additional value to be imparted to the clip by a little attention and knowledge on the part of the flock-master, as every farmer might see and learn in thirty minutes' time, were he to go and see the many poor people at work, as we did with pleasure, in Mr. Baynes's establishment. We say with pleasure, because it was gratifying to see that good may come even out of evil, as here poor, infirm men, and otherwise helpless women, derived support from the slovenly management of lazy or indifferent sheep-owners.

NEW JERSEY TARIFF CONVENTION.

THE New Jersey Tariff Convention convened at Trenton on Wednesday, and was called to order by Col. Joseph Jackson, probably the oldest living manufacturer of iron in the State, possibly in the Union, and on his nomination, Peter Cooper, Esq., of Trenton, was called to the chair, and Messrs. Joseph Jackson, of Morris, William P. Robson, of Warren, and Thomas H. Richards of Burlington, were appointed Vice-Presidents, and Messrs. Wm. Green, Jr., of Morris, and Abm. S. Hewitt, of Trenton, Secretaries. A committee on resolutions was then appointed, consisting of Messrs. Edwin Post, of Sussex, Wm. Green, Jr., of Morris, Peter M. Ryerson, of Passaic, Thomas H. Richards, of Burlington, Charles Scranton, of Warren, and Abraham S. Hewitt, of Mercer. The Convention then took a recess, after which the following resolutions were reported by Mr. Post, and after some discussion, in which Messrs. Cooper, Hewitt, Jackson, and Perdicaris participated, they were unanimously adopted, viz. :

Resolved, That it is the deliberate sense of this convention, composed of men of *all parties and from all sections of the State*,* that the tariff of 1846 has now had a fair trial, and that while some of its features are unobjectionable, its operation has been very injurious to all the great manufacturing interests of the State ; and the agricultural classes, in the absence of European famine, have found the uncertain foreign demand a most meagre substitute for the steady cash market at home.

— That the next Congress of the United States will be called upon to decide a question of great magnitude to New Jersey ; whether the tariff shall be modified in some of its most objectionable features, or whether the manufactories of this State shall remain closed, and the most serious injury be done to all its branches of protective industry.

— Therefore, that it is the solemn and paramount duty of the members of Congress from this State to urge, as the united voice of New Jersey, such modifications of the tariff as shall again put our machinery in motion, and afford full and profitable employment to the operatives who are now idle, and a home market for the surplus produce of the farmer.

— That we do not recommend an indiscriminate and hasty repeal of the tariff of 1846, but that our members of Congress are as much bound to contend for such of its provisions as may have been found to operate advantageously, as against those which have paralyzed the strong arm of labour.

— That we do not ask for such duties as shall prohibit the introduction of foreign merchandise—but such rates merely as will enable us to enter into fair competition with foreign manufacturers, without reducing the wages of our operatives to the European standard ; and that we are then ready for the contest between American industry, skill, and enterprise, based upon well paid, intelligent labour, against superior European capital, working with half-fed and half-clothed operatives, ignorant of the true value of their toil, because they have never received its just reward.

— That a committee of correspondence, consisting of five members, be appointed by the chair, whose duty it shall be to issue an address to the people of the State, setting forth clearly the issue between the modification of the tariff, and the permanent suspension of our manufacturing establish-

* As a politician, Mr. Cooper is a decided Democrat ; yet for joining him and Democratic Governor Mahlon Dickenson, and James Buchanan, and Louis McLane, and others, in advocating protection of *American labour*, touching on politics in *no other way*, this journal is denounced as being "*horribly Whiggish*" forsooth !

ments—with power to add to their number for the purpose of circulating petitions, praying Congress for suitable immediate action in the premises ; for collecting information and statistics in regard to the industrial interests of the State ; and that they cause the same to be laid before Congress at the earliest practicable period, at its next session.

— That Wm. P. Robeson, Adam Lee, Peter Cooper, and Edwin Post, be appointed delegates on behalf of the State of New Jersey, to attend the Tariff Convention, to be held at Pittsburgh, on the 21st inst., and that they have power to add to their number, and appoint substitutes in case of their inability to attend.

These resolutions, says the *Newark Advertiser*, fairly express the prevailing feeling in New Jersey on the subject. The fifth comprehends the truth in relation to it, as it is held by the friends of home industry here and throughout the country ; and we are glad to add that the convention adopted further measures to promote the cause, by the appointment of a committee of correspondence, consisting of Messrs. Post, Richards, Green, Hewitt, and Travers. Complaints of the operation of the tariff as it now stands are raised in nearly every part of the country, and from the producing classes of nearly every description. Our readers are already but too familiar with its deadly effects upon the iron interest ; and one who claims to be the oldest living manufacturer of woollens in the United States—having conducted the business at Bloomfield from 1812 to 1825, and since in New England—writes that during the whole of this period of near forty years, he has witnessed no such fluctuations in the trade as have occurred within the last three, or since the introduction of the tariff of 1816. We have assurances from Washington that the whole subject will be fairly brought before Congress by the Cabinet, and the people should corroborate its efforts to produce the all-important revision of this wretched system of revenue.

EXHIBITION OF THE INDUSTRY OF ALL NATIONS.

PRINCE Albert, who is President of the Society of Arts, has originated a plan for a grand exhibition of the Industry of all nations at London, in the year 1851, which has been generally approved throughout the empire, and is now open for discussion throughout the world. The object has been stated by some to be simply to show the English nation how much the arts and manufactures of that country have improved, and how well they are able to stand in competition with the productions of other parts of the world ; but this narrow ground has been abandoned, and the object now presented is to direct the minds of the whole world to the peaceful pursuits of industry, and by friendly competition and generous rewards to cement more closely than ever the amicable relations of all the nations of the earth. It is proposed that the collection and exhibition shall consist of raw materials, machinery and mechanical inventions, manufactures, sculpture, and the plastic art generally. It is not intended to be an assemblage of ordinary productions, but of the very best works, in all these classes, which the world can show. There are some “Yankee notions” in the way of improved machinery, which it might limber the neck of John Bull to look at ; and there are manufactured fabrics produced on this side of the water, albeit our nation is in its childhood, which even our grandsire on the other side might pronounce “pretty well done for a boy !” Success, then, to the effort.

ON THE MOST ADVANTAGEOUS FORM FOR COMMON WOODEN FIELD-GATES,

WITH A VIEW OF DETERMINING THAT WHICH WILL BEST ENSURE
LIGHTNESS, STRENGTH, CHEAPNESS, AND DURABILITY.

By GEORGE BUIST, Esq., BOMBAY.

IN conducting some inquiries on the subject of agricultural mechanics, especially in those implements of more simple form, where the application of the principles of abstract theory were unlikely to receive any modification or to require any correction from incidents in the course of their operations, I became surprised with the varieties in the forms of our field-gates, differing widely from each other, and deviating, as it appeared to me in many cases, from the statical laws by which the mechanic ought in all cases to be guided. On a diligent and careful inquiry at the most intelligent and well-informed workmen as to the principle of construction pursued by them, it did appear to me that, on this subject, they gave heed to no principle whatever; that each adopted the form which his own fancy suggested or the caprice of his employer pointed out.

To test the accuracy of the last of these assumptions, I have for a long period been in the habit of making drawings of gates of every variety, or notes in reference to such as differed slightly, if at all, from those already drawn, and I may venture to state, that I have not found one in fifty which did not, in some one quarter or another, do violence to the first principles of mechanics; as, indeed, the reason is very obvious, when it is considered that they consist of many parts, for the proper collocation of each of which a very uniform and rigid rule obtains, and that yet of all these rules, or indeed of their very existence, many of our ordinary workmen are yet in a state of ignorance.

Sweeping as this charge may at first sight appear to be, I shall have no hesitation, after the result of the rules just about to be laid down shall have been compared with the facts, to leave it to any one, who shall have compared them together, to pronounce whether it be too much so.

Importance of Lightness in Gates.—It is singular, considering the magnitude of its importance, quite irrespective of the cost and waste of material occasioned by it, how often and how utterly the inexpediency of excessive weight in gates is disregarded. Yet to this cause mainly, when otherwise the structure of gates approach any thing like accuracy, are we to ascribe the speedy distortions they so frequently attain. Not only is a heavy gate a perpetual and incessant strain on the hinges, crooks, pillars, or walls which support it, but it tends to its own destruction from the weight of the materials of which it is formed. A heavy gate shut suddenly has the velocity of its mass so instantaneously arrested when checked by its bolt, that it tends to shake itself to pieces, and every joint and tie suffers an unnecessary strain. How speedily does the bolt of such a gate lose its proper place along with its efficiency for service? How soon and how clumsily does its forefoot drag along the ground? Its pillars droop, its hinges are twisted—the elements of self-destruction are in itself.

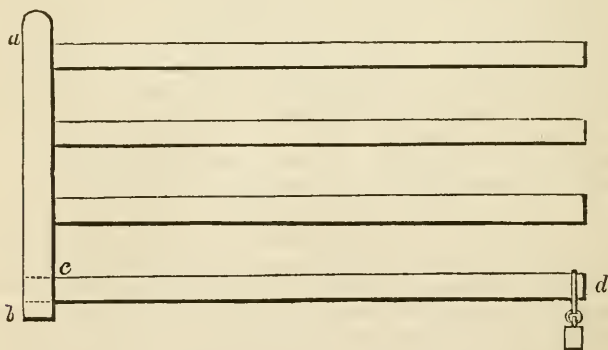
Jointing Wooden or Iron Gates.—There is not a more fertile source of malformation in gates, than inattention to the modes in which the different varieties of material from which they are made should be put together. A wooden diagonal, made to connect two portions of a gate together in the

manner of a tie, so as to sustain a pulling strain, must either be notched in, dovetailed, tennoned with a pin or wedge, or nailed, or bolted. In the case of its being notched, it is cut away till the notched portion has only half the substance of the material left to perform its office. Should it be dovetailed or mortised, matters are still worse, as in this case it not only is stripped of more than one half of its own strength, but requires one half of the transverse beam to be cut away from it. Nails or bolting are alike faulty, as the whole support is then reduced to the strength of the nail or bolt bearing a cross strain, or to the cohesion of the woody fibres lying between the nails and the end of the tie. To any one who considers the matter, the impossibility of jointing wood in such a manner as to make it thoroughly resist the pulling strain without yielding, will appear a matter which requires no demonstration. If wood is to be used as a bracing agent in such a construction, it must be applied as a *strut*, and, if possible, its entire cross section should be brought to bear in the thrust.

In the case of iron, as applicable to ties, the converse of all this holds true. Iron can be welded into a hasp or clamp, headed up like a bolt, screwed, twisted, or fashioned with very little extra cost, and without diminution either in its own strength or the strength of the rails, or the heel or head-post to which it may be attached. Malleable iron is, however, unfit for a strut, because unless made very heavy, it easily bends with a thrust, though it will safely and easily stand a pull of twenty tons for every square inch of its transverse section. The maxim, then, for the diagonals of all gates is, "*Stay with iron, strut with wood.*"

Stiffening of Simple Gates generally.—By dilating much on the abstract doctrines referring to this point, would incur the risk of going twice over ground, which it will be necessary at any rate to traverse in explaining in detail the faults of the gates of which I am about to give examples, and the best mode of remedying them. Cross strains are those least capable of being resisted by any material of which gates can be made, and these cross strains are still more apt to prove destructive when applied to a lever of advantage. If, for example, *a b*, Fig 1, be the heel-post of a gate, and *d c*

Fig. 1.

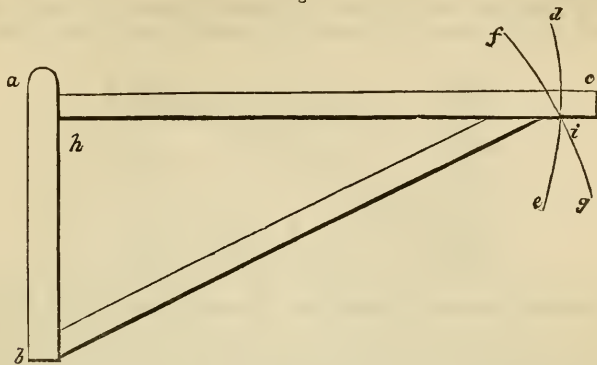


one of its rails, nine feet long, the mortised part at *c* being six inches; then if a weight of one pound be suspended at *d*, it would tend to break *d b* across at *c* with a force of eighteen pounds, the one arm of the lever of which *c* is the fulcrum being to the other as eighteen to one.

A gate, therefore, not properly fitted with a diagonal strut or stay, is of the weakest possible form, and very shortly, whatever be the material of

which it may be made, or however it may be situated, tends to droop at the forefoot and assume a lozenge form. The following may explain the rationale of a diagonal action :—Let $a b$, Fig. 2, be the heel-post of a gate as before,

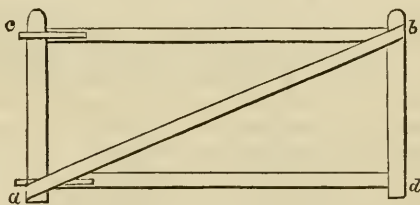
Fig. 2.



$a c$ the upper rail, and $b c$ the diagonal. Were $a c$ left unsupported, then it would tend to describe the arc $d e$, and to bend at h . Were $b c$ in like manner left unsupported, it would tend to describe the arc $f g$. Now these arcs intersect each other at the point i ; but if the arms which describe them be at that point made fast, then no further traverse on the part of either will be permitted. A weight suspended at the point c would no longer create a revolving motion on the part of either arm, but would tend to turn round the whole machine, to pull out $c a$ and thrust in $b c$. But this is exactly what is desired, because the greatest strain which can be borne is by the material meant to sustain it being exposed either to a thrust or pull. We have just said that, in the case of a strut, such as that afforded by $b c$, $a c$ is pulled and $b c$ thrust in. This tends to compact the ends of the diagonal into its mortice, but in the same manner, and to the same extent, tends to pull the gate to pieces. A stay or diagonal, sustaining a pull, is then, irrespective of all other considerations, to be preferred to a strut, as the one tends to compact and keep together, the other to separate the gate. Hence the great advantage of applying light rods of iron in the form of stays or ties in all such structures as gates.

Fig. 3 is an illustration of one of the most frequent malformations of the common wooden gate, whose structure at first sight seems to be quite accurate, and does in reality approach very near to accuracy.

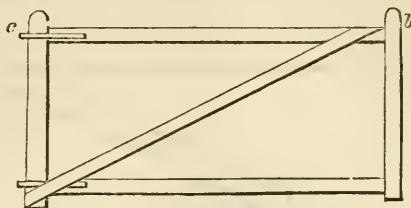
Fig. 3.



This gate, Fig. 3, is represented with the upper and lower bars only : $a c$ is the hinge-end or heel-post ; the diagonal $a b$ ascends from it as a strut ; but then, instead of being inserted at its upper termination in the top-rail, and so drawing against the clamp of the hinge c , which binds the top-rail and heel-post together, and which nothing could remove, it thrusts

Fig. 4.

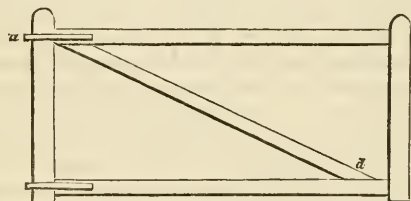
against the head-post at *b*, where there is no resistance except the mortise; and, consequently, the gate when strained tends to droop by the pushing of the head-post outwards, and a rupture of the mortise ensues. The remedy is simply to fasten the strut by tennon, dovetail, or notch—the last being much the best—to the top-rail *c b*, as in Fig. 4; it then pulls the bar



in the direction of its fibres, and strains upon the iron clamp of the hinge at *c*, which cannot give way. To facilitate this mode of fastening at the upper end, it is of very small moment that the diagonal be deeply notched at the points where it crosses the horizontal rails; because, if this be done correctly, the portions cut away are perfectly supplied by the horizontal rails on which the ends of the diminished diagonals abut. On no account should the horizontal rails themselves be cut or notched, because nothing can come in to supply the portions which have been removed from them; and they are just weakened throughout in proportion to the magnitude of the part cut away.

Fig. 5 is an example of a wooden gate, with a wooden diagonal *a d* applied as a tie.

Fig. 5.

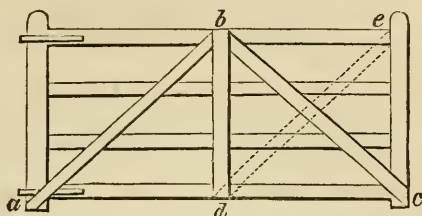


A gate so constructed will speedily droop at the forefoot, and become lozenge-shaped. This is not in the present, as in the former example, however, occasioned by the joints of the horizontal rails suffering from dislocation, but from the imperfection of the joining of the diagonal itself, of whatever nature that may be when the strain is a *pulling* one—permitting it to be readily withdrawn from its place, and so ceasing to give the gate the requisite support. There is no proper remedy or corrective for this: the wooden *stay* diagonal *must be thrown aside*, and either a wooden *strut* diagonal substituted in its place, or, what is far better, and supplies us with one of the most inexpensive and efficient plain gates we can obtain—a light iron diagonal tie applied in the place of the former to the common wooden gate. This begins now to be frequently employed, especially on fences and enclosures required for railways, where the skill and science of the engineer watches over and directs the operations of the mechanic. The iron need not be more than half-inch in diameter. It can be easily and efficiently adapted to any form of gate. It forms a cheap, thoroughly efficient, and perfectly indestructible stay, and ought on every ordinary occasion to take the place of all others whatsoever. An iron diagonal stay can also be

applied at any time to a gate of any form in almost any stage of decay or deformity: if clasped around its forefoot, or fastened with a rivet-head and clamp to protect the wood, and then brought up to the upper hinge end, and drawn tight with a nut and screw, it will furnish a cheap and easy remedy for any extent of deformity short of absolute fracture.

It would be endless to attempt to describe every variety of absurdity to

Fig. 6.



be met with in the construction of field-gates; but one or two cases may be given as types of the whole.

The first of these, Fig. 6, is in the shape of the common flake or hurdle; and for this it is particularly well adapted, because the flake being equally well supported at both ends, $a b$ and $b c$ act as struts abutting at a and c ; but respectively, the conditions of a gate which hangs from one end, and is at the other wholly unsupported, is totally different. In this case $a b$ acts as a strut to the heel half of the gate, and so may be all well enough, but for the difficulty already pointed out in the first example of making a secure joint at b . In the second half of the gate, on the other hand, $b c$ acts as a tie, and underlies all the objections before mentioned as applicable to ties of wood.

Another form is to be found wherein the tie $b c$, Fig. 6, is removed and placed in the position of the dotted lines $d e$, which affords an example rather of negative than positive disadvantages. The gate, without any reason, is divided into two separate parts, each having a strut-diagonal, and each diagonal requiring the same jointing, being open to the same dislocations as those incident to the single one; so that a gate of this form is at once considerably more weak, and decidedly less durable, but more expensive, than one of the simply strutted sort exemplified in the first case laid down.

The above remarks may be held as sufficiently copious for the illustration of the doctrines meant to be explained in reference to ordinary wooden gates.

Exports of Breadstuffs.—The aggregate exportation of breadstuffs from the United States to Great Britain and Ireland, up to the latest dates this year, compared with the corresponding period last year, has been as annexed:—

To latest dates.	1848.	1849.	Decrease.	1849.
Flour, bbls.	320,513	83,491	237,027	
Corn meal, bbls.	18,778	960	17,818	
Wheat, bushels	479,501	163,588	315,913	
Indian corn, bushels	2,918,454	422,077	2,496,377	

At this rate, we shall find outlets for but a small per cent. of the supplies of our agricultural products this year. The supply of breadstuffs in Europe is above an average, and if the potato crop proves healthy and abundant, the demand upon us will be very limited.—*Phil. Daily News.*

THE NEW YORK DRY GOODS REPORTER.

THERE is, assuredly, something in the education and habits of a large-town Editor that seems not only to quicken but to multiply their faculties; or how otherwise could they possibly collect and throw out upon the public such an immense wall of items and facts, to enlighten and profit every conceivable branch of art and industry as they do? Look at this "Dry Goods Reporter," and you would suppose the Editor, Mr. Burroughs, to possess the eyes of Argus and the arms of Briareus. As the smallest possible return for what we shall owe, every month, to him, and to our old friend Lyford, at Baltimore, we copy their TITLES and TERMS.

The Dry Goods Reporter and Merchants' Gazette.—Published every Saturday, by W. Burroughs, Jr., No. 44, William street, opposite the Merchants' Exchange. Terms: \$3 per year, in advance. Terms of advertising:—Ten lines or less, each insertion, \$1. For one month, \$4. Yearly advertisers, not exceeding twenty lines, with privilege of changing at pleasure, \$40.

Baltimore Weekly Commercial Journal, and Lyford's Price-Current,—is published every Saturday morning, at No. 117, Baltimore street, near South, by W. G. Lyford, editor and proprietor. Terms:—*Five dollars* per annum; *two dollars and fifty cents* for six months, payable in advance. Twelve and a half cents, for a single sheet.

A failure to notify the Editor to discontinue previous to, or at the end of a subscriber's year, will be considered as a new engagement for another year.

Advertisements of a square, (sixteen printed lines, or a less number constituting it,) will be inserted three weeks for a dollar. For a longer period, upon such terms as may agreed.

Printed by Jos. Robinson, Book and Job Printer, No. 117, Baltimore street.

BARTLETT'S DOUBLE PLOUGH.

[From the Boston Courier.]

BEING at Worcester a few days ago, I was invited to examine the *Double Plough*, recently patented by W. O. Bartlett, Esq., of that city, and to see its operation. It is a very simple machine; it is, in fact, two single ploughs yoked together, and, like a well-trained yoke of oxen that will do their work without a driver, seems as if endowed with sufficient intelligence to perform its office without much labour on the part of the ploughman. The machinery by which the two ploughs are connected is so contrived that they accommodate themselves to the ground. I never saw a more beautiful agricultural operation. It was in a field where corn had been raised the past summer, and which, though not stony, had rather a diversified surface of plain and valley. The plough was drawn by a single team of oxen, attended by one man, whose attention seemed to be necessary only when he came to the end of his furrow, to turn the plough into its proper position for another. He walked generally by the side of his team. The man, the team, and the plough seemed to be so many parts of a well-adjusted self-moving machine, that only required *winding up* to keep it in constant motion. If any one should have occasion or inclination to write a lecture on the poetry of husbandry, let him first go to Mr. Bartlett's farm, where he may get inspiration from the double plough, and learn wisdom from various improvements which are there in progress.

I think that no one who has seen the operation of this plough can for a moment doubt its superiority over every other instrument that has ever been

invented for tilling the ground. On some soils it may require more draught than the common single plough, (though I am not certain of *that*,) but if it should, this requirement is immensely overbalanced by the amount of work performed. It requires no uncommon sagacity in a farmer to perceive that he is, in all respects, a gainer, when he can perform in a single day the labour that had formerly occupied two or three. There is no doubt that a good team, either oxen or horses, would plough four acres in a day with this simple machine, and the ploughman would have the pleasure of seeing, at its close, his field with a new surface, beautifully turned up in furrows of uniform width and depth, and in parallel lines, almost as straight as if drawn by a strict mathematical process.

J. T. B.

We take the above from "The National Intelligencer." There is a *treble* plough getting into use and popularity on the Eastern Shore of Maryland, for putting in wheat especially, that is obviously worthy of patronage as a labour-saving implement. They are arranged on eschalon fashion.

This invention or improvement has been ascribed to the late *Virgil Marcy*; but we have seen, in an old Walker's Hibernian Magazine, an account of such a plough, or one on the same principle, more than sixty years ago. The list of new things would indeed be much abridged, if we could go back far enough.

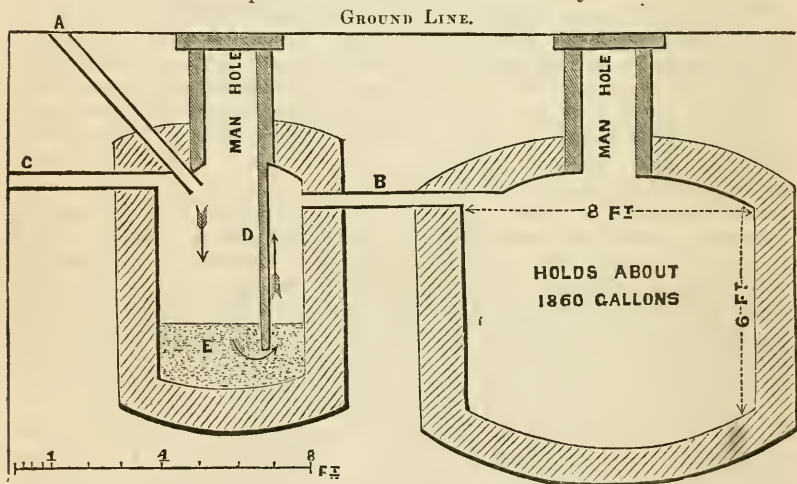
STORING POTATOES.

POTATOES for house-use kept in prittles, (large open baskets which the bottle merchants use,) become mealy and of peculiar and fine flavour. Every gardener will agree that the first and strongest pods and plants should be selected for seed—the directions in the oldest books counsel this. Great care is taken to keep pulse and seeds dry, why should potatoes be solely subjected to different and to a bad system? to be put into heaps and under ground. Those to be reserved for seed, (and these of the best,) should be protected from both frost and damp, but in fine weather the air should be enabled to pass through and around the heap, in order that the constantly exuding moisture might be carried off. It is carefully wiped from pears, apples, &c.; in Malta from their oranges, which are also wrapped in an absorbent paper. In Madeira, bananas are put into perforated casks, to allow the damp to escape, the retention of which, the writer has found, and for years, to be most prejudicial to the future seed; and may not the plants therefrom become more tender, and less able to resist what otherwise might make little or no impression on them? Carrots, &c., could not be kept if subjected to the same bad contact which potatoes must submit to. The writer has found the potato disease wheresoever the pitting system is followed; it is not present where the dry process exists. Let any one call to mind what he may have seen and smelled when a large pit has been opened. Not a tuber would shoot or a potato be lost by the dry process. A trial of the prittles (holding fully $1\frac{1}{2}$ sack each) will prove how much the flavour of the potato is improved by the dry process; and the barn floor could be easily arranged by the large growers to preserve all the seed they require.

There are 5800 taverns in the State of New York, 253,000 farmers, 51,000 merchants, 13,000 manufacturers, 125,000 mechanics, 3500 lawyers, 4000 doctors, and 4300 preachers. Here are 68,600 non-producers who live on the farmer, the manufacturer, and the mechanic. The merchant is a mere go-between to exchange the products of their industry. The lawyer helps them from litigation into limbo. The doctor from this world to a better—sometimes.

RAIN-WATER TANK FILTER.

THE following is a description of the filter attached to my underground tank. The tank itself is about 5 yards long, 10 feet wide, and 7 feet deep. The filter is attached to one end of it, and consists of a chamber as long as the tank is wide, the same depth as the tank, and about 4 feet 6 inches wide. It is divided into two equal parts by a wall, through which, at the bottom, is an opening about 12 inches high by 18 inches. Just above this opening is fixed in one of the compartments, a false bottom of iron, perforated with half-inch holes, and upon that plate is packed the filtering materials, as follows: 1st, coarse gravel, 2 feet; 2d, charcoal, 10 inches, upon which is spread a piece of coarse blanket or drugget, and upon that about 18 inches of fine gravel. Three similar layers may be placed in the other compartment, but I do not consider it necessary. Into this latter compartment the foul water from the roofs, &c., flows; it then passes through the opening in the partition wall into the other compartment, rises up through the false bottom and filtering materials, and flows through a delivery pipe into the tank. This pipe must of course be a little below the level of the supply pipe. The tank and filter are built of brick, and well cemented inside. The former is arched over. *T. W. S., Cheshire.*—I have had the following plan of a filter in use for some years, and the water is always sweet and fit for use. The filter requires to be cleaned once in the year.—*J. H. N.*



REFERENCE TO WOOD CUT.—A, supply pipe; B, connecting pipe; C, waste-pipe; D, stone or brick tongue, built across filter tank to within 6 inches of the bottom; E, filter, composed of gravel and charcoal.

WE had intended for this number a very pregnant and interesting dissertation from MARK R. COCKRILL, Esq., of Tennessee, on "Cotton Mills by Cotton Growers, Export Duty on raw Cotton and Price of Cotton," but our pages being preoccupied, and wishing to prefix to his suggestions some views which in the press of the moment we have not time to express, we are forced to postpone it until January, when we propose to enrich our journal with essays from the same pen, on the two great subjects of Cotton and Wool Husbandry—each of them adapted to the South, and each to be enhanced and made more prolific by bringing the loom to take its place by the side of the plough.

The Plough, the Loom, and the Anvil.

VOL. II.

JANUARY, 1850.

No. VII.

THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

CHAPTER THIRD.

REVIEW OF THE COMMERCIAL POLICY OF THE LAST THIRTY YEARS.

I NOW proceed to show in detail the consumption of various commodities, of foreign and domestic production. In doing so, it will be necessary in some cases, to arrive at a correct understanding, to make allowances similar to those above given: my object being that of showing what was the power to *consume* that was derived from the power to *produce* commodities to be given in exchange for those which were consumed.* It would be proper to do this in all, but the effect would be to render the whole somewhat complicated, besides involving much labour. In giving the imports of the period from 1834 to 1841, they will always be accompanied with the mark of *minus* one-fifth, so as to show the amount consumed and *paid for*. In giving those of 1845-6 and 1846-7, they will, in some important cases, be accompanied with that of *plus* one-twentieth, so as to show the quantity of merchandise imported in a previous period, and *then paid for* by the cancelling of certificates of debt. Those of 1848 will have the mark of *minus* one-seventh, to show the amount paid for by the re-export of nine millions of foreign merchandise in the form of specie, and the export of eight millions of certificates of debt. It was my intention to give the business of the year ending June, 1849, which would have been very instructive, as in that we purchased \$22,000,000 of goods on credit, but have been unable to obtain the materials therefor from the Treasury.

The total value of pig, bar and manufactured IRON, of every description, imported into the Union, since 1821, has been as follows:—

Years ending.		Per head.
Sept. 30, 1821 to 1829, average,	\$5,400,000	48 cents.
" 1830,	5,900,000	46 "
" 1831, ...	7,200,000	54 "
" 1832, ...	8,800,000	64 "
" 1833, ...	7,700,000	55 "
" 1834, ...	8,500,000	59 "
" 1835 to 1841, \$10,000,000 — $\frac{1}{5}$,	8,000,000	49 "
" 1842 to June 30, 1843, average,	5,500,000	30 "
June 30, 1844, ...	5,700,000	30 "
" 1845, ...	9,000,000	46 "
" 1846, ... \$5,830,000 + $\frac{1}{20}$	6,120,000	31 "
" 1847, ... + $\frac{1}{20}$	9,000,000	44 "
" 1848, ... 12,500,000 — $\frac{1}{7}$	10,800,000	50 "
" 1849, ... 13,833,094		

* See December number, page 331.

We see here, that the value imported and *paid for*, largely increased from 1830 to 1834, under the protective tariff of 1828; that it diminished considerably between 1834 and 1841, and that it reached the lowest point in 1841-2 and 1842-3. Thenceforward it rose, and the year 1846-7 shows an advance of about fifty per cent. from the lowest point. It is therefore obvious, that the power to pay for foreign iron increased under protection, and diminished with its withdrawal. I give now the *quantity* of various kinds of IRON imported :

	Pig, tons.	Old, tons.	Rolled, tons.	Hoop, tons.	Steel, tons.	Ham'd, tons.	Total, tons.	Pr h. lbs.	
1821 to 1829, average,	1550	—	5400	1500	1200	26,000	35,650	7	
1830, ...	1129	—	6449	1038	1223	30,693	40,532	7	
1831, ...	6448	—	17,245	2532	1710	23,308	51,243	8 $\frac{2}{3}$	
1832, ...	10,151	—	20,387*	2853	2146	38,150	73,687	12	
1833, ...	9330	998	28,028*	3350	2131	36,129	79,961	13	
1834, ...	11,113	1617	28,896*	2214	2431	31,784	78,055	12	
1835 to 1841, average — $\frac{1}{5}$	8800	640	36,000*	2600	2150	24,000	74,190	10	
1842-3, average, ...	14,500	500	46,000†	2900	2400	14,750	81,050	10	
1844, ...	26,050	5770	46,000	3600	2800	17,500	101,720	12	
1845, ...	27,000	5800	51,000	5800	2800	18,176	110,576	13	
1846, ...	24,000	2350	24,000	5040	5200	21,800	82,390	9	
1847, ...	27,800	1850	40,000	6000	5400	15,300	96,350	10 $\frac{3}{4}$	
1848, ...	— $\frac{1}{4}$	44,000	5700	70,000	8300	5850	17,000	150,850	16
1849, ...	Total quantity imported, 317,000 tons; paid for,						260,000	27	

The quantity *paid for by our exports* was thus almost doubled before the termination of the second period, in 1834; while it diminished under the compromise, and still further under the revenue system. As the tariff of 1842 came into activity, we find a rapid increase in the power to purchase, until the import became checked by the vast increase in the price abroad, and in the manufacture at home.

DOMESTIC PRODUCTION OF IRON.

In 1810, the whole number of furnaces in the Union was 153, yielding 54,000 tons of metal, equal to 16 pounds per head of the population.

1821, the manufacture was in a state of ruin.

1828, the product had reached 130,000 tons, having little more than doubled in eighteen years.

1829, it was 142,000. Increase in one year, nearly ten per cent.

1830, " 165,000. Increase in two years, more than twenty-five per cent.

1831, " 191,000. Increase in three years, about fifty per cent.

1832, " 200,000, giving an increase in three years of above sixty per cent.

1840, the quantity given by the census was 286,000, but a committee of the Home League, in New York, made it 347,700 tons. Taking the medium of the two, it would give about 315,000 tons, being an increase in eight years of fifty per cent.

1842, a large portion of the furnaces were closed, and the product had fallen to probably little more than 200,000, but certainly less than 230,000 tons.

1846, it was estimated, by the Secretary of the Treasury, at 765,000 tons, having trebled in four years.

1847, it was supposed to have reached the amount of not less than 800,000 tons.

1848, it became stationary.

1849, many furnaces being already closed, the production of the present year cannot be estimated above 700,000 tons; but, from the accumulation of steel and the difficulty of selling it, it is obvious that the diminution next year will be greater.

* Railroad iron free of duty.

† Duty re-imposed.

	Domestic product.	Per head.	Import. Per head.	Total consumption.
1821 to 1829, average, .	90,000	18	7	25
1830, ...	165,000	29	7	36
1831, ...	191,000	33	8 $\frac{2}{3}$	41 $\frac{2}{3}$
1832, ...	210,000	35	12	47
1833, ...	210,000*	33	13	46
1834, ...	210,000*	33	12	45
1835 to 1841, average, .	250,000	35	11	46
1842-1843, average,	230,000	28	10	38
1844, ...	380,000	45	12	57
1845, ...	500,000	58	13	71
1846, ...	765,000	86	9	95
1847, ...	800,000	88	10 $\frac{2}{3}$	98 $\frac{2}{3}$
1848, ...	800,000	86	19	105
Deduct from this the quantity imported in exchange for certificates of debt, and therefore remaining to be paid for at a future time, ...				3
There will remain				102
If now we further deduct from this the accumulation of stock on hand, we shall find the consumption not exceeding that of the preceding year, say				98 $\frac{2}{3}$
1849, ...	650,000	67	32	99
The value imported in this period is \$13,800,000, and the amount of debt incurred is \$22,000,000, chiefly for this iron. The quantity on hand is variously estimated between 250 and 300 thousand tons. Taking the former, the amount per head would be				26
Which being deducted, would leave the consumption at				73

From 1821 to 1829, the cost of iron, in labour, was high, as is shown in the fact that the consumption was but twenty-five pounds per head. In 1832, it had risen to 47 pounds; but, railroad iron being then freed from duty, the consumption of the two following years fell off, indicating an increased difficulty of obtaining it. Thence to 1841, the average power of consumption appears to have remained almost perfectly stationary; but, in the two following years, we find it receding rapidly. As the tariff of 1842 comes into operation, there is a rapid increase in the power of consumption, indicating a diminution in the amount of labour required for its purchase; and the year 1846-7 shows it attaining a point far higher than ever before known, being almost 100 pounds per head. With the year 1847-8, the domestic production declined in its ratio to population, and the import increased; but the total quantity in market was very little greater than in the previous year, yet the close of that year showed an accumulation of stock on hand. In 1849 we find a rapid increase of import and diminution of production, yet the total quantity brought to market is less per head than in 1846-7, and of that there is already so vast an accumulation that the seaports are filled with it, and the stock on hand at the furnaces is such, that many will be forced to stop work, as numbers have already done.† It is obvious that the difficulty

* Railroad iron, free of duty.

† Pennsylvania is the great iron-producing State of the Union, and we may form some idea of the accumulation of stock, or the diminution of production, there, from the following facts. The pig iron sent to market by the one route of the Chesapeake and Delaware Canal, from the opening of navigation to the first of September, 1848, amounted to 24,000 tons; whereas, in the same period of 1849, it fell to little over 12,000 tons, and the bar iron from 5000 to 1250 tons.

of obtaining iron is increasing, and that the consumption is rapidly diminishing, with a tendency to still further diminution.

The important facts to be derived from this examination are—first, the small increase of importation that results, even temporarily, from the abolition of the duty. During the period from 1830 to 1832, railroad iron paid duty, and yet the importation trebled in that time, and the last year was far the greatest of the three. For nine years after, it was totally free from duty; and, although much of that which was imported for railroads is said to have been used for other purposes, the increase averages but seventy per cent. By the tariff of 1841,* railroad iron was rendered subject to duty, and the import of rolled iron in 1842 and 1843 was 46,000 tons, being two-thirds more than was imported free of duty in 1834.

Second. That, under the protective tariff of 1828, the total consumption, per head, increased, in four years, fifty per cent. That, under the system which prevailed from 1832 to 1842–3, consumption was almost stationary, and was probably less per head than it had been at the commencement of the period. That, under the tariff of 1842, the average consumption increased in the first year from thirty-nine to fifty-seven pounds, and that, in 1846 and 1847, it attained the height of almost one hundred pounds per head, exceeding by 150 per cent. the consumption of the free trade period of 1842–3.

If, now, we look at the single article of railroad iron, we find similar results. Up to 1842, not a single ton of it had ever been made in this country, and yet the average consumption of rolled iron, of every description, in the ten years from 1832 to 1842, free of duty as it was, was but about 36,000 tons. Commenced only in 1843, the manufacture of railroad bars in 1845 had already reached about 50,000 tons, and, in 1847, it had attained nearly 100,000 tons, and yet the average import of rolled iron for the four years was nearly as great as before. The domestic production has now fallen almost to nothing, and yet the import has been only 174,000, of which, it is said, there is now on hand a supply adequate to meet the demand, such as it is at present, for two years to come.

The questions to be settled are—Which is the system under which iron is most cheaply furnished? Which is the one under which it is most readily obtained by those who desire to use it? If free-trade be the one, then the power to import, under it, ought to grow more rapidly than the power to produce diminishes; but we see here that the power to import diminishes with the power to produce, and grows with the growth of the power of production, being greatest under protection.

COAL.

	Anthracite. Tons.	Foreign. Tons.	Total. Tons.	Consumption per 1000 of populat'n. 6 tons.
1821 to 1829, average,	37,000	30,000	67,000	
1830, ...	142,000	54,000	196,000	15
1831, ...	216,000	34,000	250,000	19
1832, ...	318,000	66,000	384,000	28
1833, ...	395,000	85,000	480,000	34
1834, ...	451,000	67,000	518,000	35
1835 to 1836, . . .	671,000	78,000	749,000	50
1837, ...	881,000	140,000	1,021,000	64
1838 to 1841, . . .	850,000	145,000	995,000	58
1842, ...	1,108,000	141,000	1,249,000	69

* This was a provisional tariff, having for its sole object the increase of revenue, and was limited to alterations in a few articles.

	Anthracite. Tons.	Foreign. Tons.	Total. Tons.	Consumption per 1000 of populat'n.
1843, ...	1,312,000	55,000	1,367,000	74
1844, ...	1,631,000	87,000	1,718,000	90
1845, ...	2,023,000	86,000	2,109,000	108
1846, ...	2,343,000	156,000	2,499,000	125
1847, ...	2,982,000	148,000	3,130,000	152
1848, ...	3,089,000	196,000	3,285,000	156
1849, ...	3,200,000		3,400,000	156

In this case, it has been necessary to separate the years 1842 and 1843, because of the whole of the latter coming within the action of the tariff of 1842,* the account of the domestic production being made up to the close, instead of the middle of the year, as in the case of imports.

The facts that here present themselves are worthy of careful consideration.

When we produced little coal, we imported little, the total consumption being only six tons per thousand of the population. As the production grew, the import grew, and thus, in 1846 and 1847, when we produced *eighty* times as much as in the period from 1821 to 1829, we imported five times more.

From 1829 to 1834, and thence to 1837, the increase of consumption was rapid. Thence to 1841, it diminished ten per cent. In 1842, it was scarcely higher than it had been five years before. In the five years which followed, it rose from 69 to 152 tons, showing a rapid diminution in the quantity of labour required to be given in exchange for it. In 1848, under the action of the tariff of 1846, the consumption became almost stationary, and it is now rapidly diminishing, showing a great increase in the quantity of labour required to be given in exchange for it. The power of consumption grew rapidly under protection, and it is now diminishing rapidly with its withdrawal.

With every step in the growth of the home production of coal, the money price has steadily diminished. That of a ton of anthracite in 1826, in Philadelphia, was six, eight, and sometimes ten dollars, and yet the whole import was only 970,000 bushels, or about 30,000 tons. In 1846, the price of anthracite was about four dollars, and yet the import was 156,000 tons. It would appear from this, that when a nation is capable of supplying itself, other nations, desiring to sell, must come to them and sell at the lowest price, and the consumption is large; but when it cannot supply itself, it must go abroad to seek supplies, and pay the highest price, and then consumption is small. Applying this to iron, we find that when we had to seek abroad for nearly all our supply, it sold at prices twice or thrice as great as those at which it is now obtained.

In 1846 and 1847, notwithstanding the vast increase in the supply of coal, so great was the consumption that we had to go abroad to make up the deficiency, and to pay the high prices which our own demand largely tended to produce, a state of things which could not have happened had we been prepared to supply the whole demand.

It remains to be seen whether the converse of this proposition may not be true, to wit, that when a nation makes a market at home for nearly all its products, other nations have to come and seek what they require, and pay the highest price; and that, when it does not make a market at home, markets must be sought abroad, and then sales must be made at the lowest prices. If both of these be true, it would follow that the way to sell at the highest prices and buy at the lowest is to buy and sell at home.

* It came into action on the 30th of August of that year.

COTTON.

IMPORT OF COTTON GOODS.

Years ending			Per head.
September 30,	1821 to 1829, average, ...	\$9,454,000	84 cts.
"	1830, ...	7,862,000	61
"	1831, ...	16,090,000	1.21
"	1832, ...	10,399,000	76
"	1833, ...	7,660,000	54
"	1834, ...	10,145,000	70
"	1835 to 1841, ... 12,000 — $\frac{1}{5}$...	9,600,000	59
"	1842 to June 30, 1843, average, ...	7,184,000	39
June 30,	1844, ...	13,641,000	72
"	1845, ...	13,863,000	71
"	1846, ...	13,500,000	67 $\frac{1}{2}$
"	1847, ...	16,071,000	78
"	1848, ... \$18,412,000 — $\frac{1}{7}$...	15,582,000	74
"	1849, not obtained.		

The number of yards imported in several years is thus given. I have been unable to complete this table, or it should be given in full. I give all I have met with :

1831, ...	68,577,000
1835, ...	53,974,000
1836, ...	56,931,000
1837, ...	23,774,000
1838, ...	20,240,000
1839, ...	42,418,000
1840, ...	20,011,000
1842-3, ...	8,936,000
1844-5, ...	34,500,000
1845-6, ...	36,800,000

The differences here appear much more striking than in the table above. The diminution of consumption under the free-trade system is very regular, and the increase under protection nearly as much so.

Owing to the variety of cotton goods imported, it is difficult to estimate the weight of cotton contained in them ; but, in the following table, I have made a rude estimate, with a view to show the growth of domestic consumption. It must be borne in mind that a large portion of the foreign commodities are of the finer and more costly descriptions, and that the weight is therefore small when compared with the value.

Crop of	Taken by Northern manufacturers.	Taken by Southern manufacturers.	Per head, domestic.	Per head, foreign.	Total, p. head.
1825-6 to 1829-30, average, bales	110,000	.....	4 lbs.	1 $\frac{1}{4}$ lbs.	5 $\frac{1}{4}$
1830-31, ...	182,000	.....	5 $\frac{1}{2}$	1	6 $\frac{1}{2}$
1831-32, ...	173,000	.....	5 $\frac{1}{4}$	2	7 $\frac{1}{4}$
1832-33, ...	194,000	.....	5 $\frac{1}{2}$	1 $\frac{1}{4}$	6 $\frac{3}{4}$
1833-34, ...	196,000	.....	5 $\frac{1}{2}$	0 $\frac{3}{4}$	6 $\frac{1}{4}$
1834-35, ...	216,000	.....	5 $\frac{3}{4}$	1 $\frac{1}{4}$	7
1835-36, to 1841-42, average, ...	263,000	.....	6 $\frac{1}{2}$	1	7 $\frac{1}{2}$
1842-43, ...	325,000	.....	7	0 $\frac{3}{4}$	7 $\frac{3}{4}$
1843-44, ...	347,000	.....	7 $\frac{1}{4}$	1 $\frac{1}{4}$	8 $\frac{1}{2}$
1844-45, ...	389,000	.....	8	1 $\frac{1}{4}$	9 $\frac{1}{4}$
1845-46, ...	423,000	30,000	9 $\frac{1}{4}$	1 $\frac{1}{4}$	10 $\frac{1}{2}$
1846-47, ...	428,000	40,000	9 $\frac{1}{4}$	1 $\frac{1}{2}$	10 $\frac{3}{4}$
1847-48, ...	531,000	75,000	12	1 $\frac{1}{2}$	13 $\frac{1}{2}$
1848-49, ...	518,000	100,000	11 $\frac{3}{10}$		

In estimating the domestic consumption, I have throughout taken the bale at four hundred pounds, although aware that there has been a gradual increase of the weight. This change would be important to be considered, if it were my object to compare 1847 with the distant year 1831; but it is unimportant when the object in view is the comparison of years which are near together, as is the fact.

The results in this case correspond almost precisely with those obtained from the examination of iron and coal. The home consumption of the crop of 1834-5, per head, was almost fifty per cent. greater than the average of previous years, while the import remained almost undisturbed. Under the Compromise, consumption appears to have remained almost perfectly stationary, the increase of domestic production being compensated by diminished importation. In 1842-3, the consumption per head was scarcely greater than it had been eight years before, when it should have doubled. With the operation of the tariff of 1842, we find the consumption of domestic products 75 per cent. greater, while the import is also almost doubled. It would appear obvious, that the power to obtain clothing in return for labour increased in both protective periods, and diminished with the approach to free trade. With 1848-9, the demand for Northern manufactures diminished; and, as many mills are now closed that were at work but a few months since,* there is reason to believe that the power to obtain clothing in return for labour is in a course of gradual diminution.

A portion of the cotton worked up at home has been exported, and was therefore not consumed at home. To have made allowance for this would have made the table very complicated, and it did not appear to be necessary, as the proportions were well preserved, having been about a million of dollars when the home consumption was 100,000 bales, two millions when it rose to 200,000, three millions out of 300,000, and five millions out of 500,000 bales.

WOOL.

IMPORT OF WOOLLENS.

Years ending September 30,			Per head. 79 cents
	1821 to 1829, average, . . .	\$8,900,000	
"	1830, ...	5,766,000	45
"	1831, ...	12,627,000	95
"	1832, ...	9,992,000	75
"	1833, ...	13,262,000	93
"	1834, ...	11,879,000	82
"	1835 to 1841, av., \$13,950,000 — $\frac{1}{3}$	11,160,000	69
"	1842 to June 30, 1843, . . .	6,300,000	34
June 30,	1844, ...	9,475,000	50
"	1845, ...	10,666,000	55
"	1846, ...	10,089,000	50
"	1847, ...	10,570,000	51
"	1848, . . . \$15,230,000 — $\frac{1}{4}$	13,000,000	62
"	1849, ...	not obtained	

* Within the last six months there have been many failures among those engaged in the business; and, in these cases, the mills are not only closed, but likely so to remain.

The import into Cincinnati may be taken as evidence of the course of affairs in the West, and here we have the same result:

1846-7, ...	12,528 bales.
1847-8, ...	13,476
1848-9, ...	9,058

We see, thus, that notwithstanding the extreme lowness of price, the consumption has diminished.

Prior to the passage of the tariff of 1824, the woollen manufacture was in a very depressed condition; and, in 1825, the number of sheep was only fourteen millions,* producing about thirty-five millions of pounds of wool. Thenceforward the number increased, and the crop of 1829, 1830 and 1831, was estimated at fifty millions of pounds, the produce of twenty millions of sheep. At the close of 1834, there had been a further increase,* but to what extent we are not informed; but the value of the woollen manufacture was estimated at 65 millions of dollars against 40 millions in 1831. In 1840, the census returns show but 19,311,000, the number having diminished while the population had largely increased. The depression of 1841-2 was accompanied by the sacrifice of sheep to a considerable extent; yet so rapid was the subsequent change, that the number, in 1845, was estimated at twenty-five millions,† and in 1848 at twenty-eight millions. Ohio had, in 1846, only 2,065,000; but, in 1848, the number had risen to 3,677,000. The number in New York, in 1845, was 6,443,000, and, subsequently to that date, it had largely increased.

The deliveries on the New York canals, and at Pittsburgh, in 1840, were one-fifth of the total production by the census; and, since that date, they are thus stated—‡

1841, ...	5,094,035	1845, ...	13,267,609
1842, ...	4,823,881	1846, ...	12,269,537
1843, ...	5,713,289	1847, ...	16,325,987
1844, ...	6,798,769	1848, ...	11,665,540

Even this does not mark the whole increase, as the woollens factories of the interior of New York and other States absorb much that would otherwise pass on the canals, destined for distant places.

With these very imperfect data, we may now form some estimate of the consumption of this most important commodity. In estimating the weight contained in the cloth imported, I have taken it as being worth one dollar per pound, and therefore the figures which represent the *value* per head, give also the *weight* per head.

Average of	Millions of sheep.	Pounds of wool.	Imports. Pounds.	Total, domestic manufacture.	Per head. Total, dom. & for.	
1821 to 1829, . .	15	37,500,000	2,000,000	39,500,000	3.50	4.29
1830, ...	20	50,000,000	669,000	50,669,000	3.90	4.35
1831, ...	21	52,500,000	5,622,000	58,122,000	4.40	5.35
1832, ...	22	55,000,000	4,042,000	59,062,000	4.40	5.15
1833, ...	23	57,500,000	950,000	58,450,000	4.15	5.08
1834, ...	24	60,000,000	2,341,000	62,341,000	4.30	5.12
1835 to 1841, . .	22	55,000,000	10,000,000	65,000,000	4.	4.69
1842 and 1843, . .	19	48,000,000	7,500,000	55,500,000	3.	3.34
1844, ...	22	55,000,000	23,800,000	78,800,000	4.10	4.60
1845, ...	24	60,000,000	28,800,000	88,800,000	4.50	5.05
1846, ...	26	65,000,000	16,500,000	81,500,000	4.10	4.60
1847, ...	27	67,500,000	8,460,000	75,960,000	3.70	4.20
1848, ...	28	70,000,000	11,380,000	81,380,000	3.90	4.52
1849,						

By the tariff of 1846, the duty on many descriptions of foreign wool was raised, while that on cloths was lowered; which accounts for the great diminution in the quantity imported.

That this is very incorrect there is no doubt; but it will enable us to make some comparison between the increase of imports as compared with the diminution of home production. From 1830 to 1834, the production

* Pitkin's Statistics, p. 488.

† Patent Office Report, 1847, p. 213.

‡ Merchant's Magazine, Vol. XXI., p. 217.

grew, and the import was large. From 1835 to 1841, the former largely diminished in its ratio to population; and the foreign cloths *paid for* in that period fell to sixty-nine cents per head. In the revenue period, from June, 1841, to June, 1843, production was very small, and the import fell to about thirty-four cents per head. In the four succeeding years, both grew rapidly. Under the tariff of 1846, there is a slight increase of import; but the home manufacture has diminished. The power to obtain cloth in exchange for labour has, therefore, invariably grown in the protective periods, and diminished with every approach to free trade.

PRODUCTION OF LEAD.

The arrivals at New Orleans have been as follows:—

	Pigs.		Pigs.		Pigs.
1828-'29, * average,	164,000	1834, ...	202,000	1845, ...	732,000
1830, ...	254,000	1835 to 1841, ...	298,000	1846, ...	785,000
1831, ...	151,000	1842, ...	473,000	1847, ...	659,000
1832, ...	122,000	1843, ...	571,000	1848, ...	606,000
1833, ...	180,000	1844, ...	639,000	1849, ...	508,000

We see here that the average of the seven years, from 1835 to 1841, was little greater than the product of 1830. The temporary tariff of September, 1841, raised the duty to five cents per pound, and production rose to almost 800,000 pigs. Since the passage of that of 1846, it has fallen to 500,000, and for this diminished supply there is little demand.

We have thus far seen that the application of labour and capital to the opening of mines, the erection of furnaces, mills, and factories, and to the conducting of such works, was arrested at the close of 1834, and that it did not recommence until after the passage of the tariff of 1842. We have also seen that it increased rapidly from 1843 to 1847, that it became stationary in 1848, and is now retrograding. Both seek to be employed, and if denied employment at home they must seek it abroad. If employed at home, there is a tendency to concentration and combination of action. If sent abroad, there is a tendency to dispersion, with diminished power of combination. One of these courses tends to increase the reward of labour, the other to diminish it. With a view to ascertain the effects of the two systems, I give,

First, The amount of IMMIGRATION, as showing how far the wages of labour tended to invite the people of foreign nations to come and reside amongst us, and,

Second, The amount of SHIPPING built, to show how far the establishment of an import trade of MEN, the cargo that pays the highest freights, tended to increase the facilities provided for the export of merchandise:—

IMIGRATION.

1821 to 1829, ...	12,000	1842-3, ...	88,133
1830, ...	27,153	1844, ...	74,607
1831, ...	23,074	1845, ...	102,415
1832, ...	45,287	1846, ...	147,051
1833, ...	56,547	1847, ...	234,742
1834, ...	65,335	1848, ...	229,492
1835 to 1841, ...	67,520	1849, ...	not obtained

* These are the earliest years for which I have met with any accounts.

	Total shipping built. tons.	Per thousand. of population.	Steamers built.	Per million of population.
. 821 to 1829, average,	90,000	8	1823-29 35	3.1
1830, . . .	58,000	4.5	37	3
1831, . . .	85,000	6.4	34	2.6
1832, . . .	144,000	10.5	100	7.2
1833, . . .	161,000	11.4	65	4.6
1834, . . .	118,000	8.1	68	4.7
1835 to 1841, . . .	108,000	6.6	92	5.7
1842-3, . . .	91,000	5	108	5.8
1844, (nine months,) . . .	103,000=137,000	7.2	163=217	11.4
1845, . . .	146,000	7.5	163	8.5
1846, . . .	188,000	9.4	225	11.5
1847, . . .	243,000	11.8	198	9.7
1848, . . .	316,000	15	175	8.3
1849, . . .	256,000	11.8		

We see here a large increase in the years from 1830 to 1834, followed by a gradual diminution until we reach 1843, after which the rise is very rapid.

On a former occasion, I stated that immigration was not affected by changes of policy until after the lapse of more time than was required for other of the subjects we have had under consideration. A change tends to raise or depress the value of labour—to raise or depress the price of men—and after a rise has been effected, men come to offer their labour for sale. It will be seen that the number in 1831 was less than in 1830, and that it was not until 1832 that it rose. With the exception of 1835, it continued to rise until 1836-7, when it reached 78,083, after which it fell. In 1843-4, it felt the effect of the disastrous year 1842, and the number was only 74,000; and it was not until 1844-5 that it began to grow rapidly. At the present moment it is large, because of the great demand for labour in the years that have passed, but it is now feeling the effect of the present diminished demand, and consequent fall of wages.

Such, likewise, is the case with shipping. The first effect of a rise of wages is to increase the power to obtain the necessaries of life, and it is not until after that shall have been done that the power to consume foreign commodities tends materially to increase. The increase of ship-building did not commence until 1832. It fell off in 1838. Thus far the movement is precisely the same as that of immigration. It recommenced in 1844, somewhat in advance of immigration. It is now maintained by that, and that alone, and when that is falling off, it must fall too. The close connection between the power to secure valuable return-freights and the power to build ships, is shown in the following table, in which the movements of both are shown:—

	Immigration.	Shipping built.		Immigration.	Shipping built.
1821-31, aver.,	14,000	87,000*	1843, . . .	75,000	64,000
1832, . . .	45,000	144,000	1844, . . .	74,000	140,000
1833, . . .	56,000	161,000	1845, . . .	102,000	146,000
1834, . . .	65,000	118,000	1846, . . .	147,000	188,000
1835, . . .	53,000	60,000	1847, . . .	234,742	246,000
1836, . . .	62,000	113,000	1848, . . .	229,492	316,000
1837, . . .	78,000	122,000	1849, . . .	not obtained	
1838-42, aver.,	76,000	120 000			

The amount of shipping at present *employed* is, probably, less than it was two years since. A vast quantity now lies idle in the ports of California, and it is to replace it that ships are now being built.† How far the immigration

* Average of last two years only 71,000.

† The reason for now building ships may be found in the fact stated in the following paragraph, which I take from one of the papers of the day:—

“It is a remarkable fact, that of all the ships arrived in the bay of San Francisco from

of the ensuing year is likely to afford inducements for increasing our tonnage may be judged from the following comparative view of the arrivals at New York in the last four months of the two past years, as compared with the present one, furnished by the Commissioners of Immigration:—

September, October, November, and December,*	1847.	1848.	1849.
	44,137	61,310	50,428

Instead of an increase of about forty per cent., there is a diminution of almost twenty per cent.; and that this decrease must go on, will be obvious from the facts contained in the following paragraph, which I take from the *New York Herald*:—

“EMIGRATION TO EUROPE.—The fine and well-trying packet-ship, Ashburton, sailed yesterday for Liverpool, having on board 104 passengers, who having taken a glimpse at ‘the land of liberty,’ and not finding it the El Dorado they expected, came to the conclusion of returning homeward. They were principally natives of Ireland. The Jamestown and Constellation sail to-morrow with similar cargoes.”

Every man who thus returns prevents the emigration of a hundred that would otherwise have crossed the Atlantic.

I propose now to show the tendency to DEPOPULATION, as marked by the sale of PUBLIC LANDS, compared with immigration:—

	Land sold. Acres.	Per head of Immigration.		Land sold. Acres.	Per head of Immigration.
1821–29, average,	825,000	69	1843, . . .	1,605,000	21
1830, . . .	1,244,000	46	1844, . . .	1,754,000	23
1831, . . .	1,929,000	83	1845, . . .	1,843,000	18
1832, . . .	2,777,000	61	1846, . . .	2,263,000	15
1833, . . .	2,462,000	44	1847, . . .	2,521,000	11
1834, . . .	4,658,000	70	1848, (3 qrs.)	1,448,000	9‡
1835–41, average,	7,150,000	105†	1849, not obtained.		‡
1842, . . .	1,129,000	11			

At no period of our history has the process of depopulation proceeded with the vigour that is now manifested. Emigrants from Europe are now returning home, disappointed; while the emigration to the West is almost marvellous. The quantity of land sold does not, as I understand, give any clue to the quantity occupied, because of the facilities afforded by the law to squatters.

It is estimated, we are told, that from thirty thousand to fifty thousand have been added to the population of Iowa within *six weeks*, and that, by the close of navigation, the population will have increased one-fourth since the 1st of September. Such is the course of things in regard to all the new States, west and south-west; and, if to this be added the emigration to California, it may be doubted if the population of the old States will be as large at the close of the year as it was at the commencement.

the Atlantic ports, some of which have been anchored there for near four months, not one is advertised for a return trip home. This, of course, is easily accounted for. There is no freight to come back, but passengers and gold dust, and as these mostly prefer the steamers, the ships have nothing to do but to wait and see what circumstances may do for them. Meanwhile, the absence of so many vessels, and the improbability of an early return, are having a strengthening influence upon home freights. Rates ere long must rapidly advance; and were it spring time now, instead of fall, I think it would be difficult to negotiate engagements at present prices.”

A vast amount of capital has been locked up in ships that are idle, and others must now be built to take their place. If they were back again, ship-building would now be entirely suspended.

* December, 1849, estimated by the Commissioners at 9000.

† To this must be added the occupation of Texas and Oregon.

‡ To these must be added the occupation of California.

PRODUCTION OF FOOD.

The power to supply food to those who come to live amongst us, and also to send it abroad in exchange for other commodities, may be taken as some evidence of the productiveness of labour applied to its cultivation, and I therefore give the following statement of the export and import of wheat and flour, in bushels of the former:—

	Exports.	Imports.	Population by immigration.	Depopulation.
1821-29, average,	4,400,000		12,000	69
1830, . . .	6,100,000		27,000	46
1831, . . .	9,441,000		23,000	83
1832, . . .	4,407,000		45,000	61
1833, . . .	4,811,000		56,000	44
1834, . . .	4,113,000		65,000	70
1835, . . .	3,914,000	311,000	63,000	105 Texas and Oregon.
1836, . . .	2,529,000	650,000		
1837, . . .	1,610,000	4,000,000		
1838, . . .	2,247,000	927,000		
1839, . . .	4,712,000		72,000	
1840, . . .	11,198,000			
1841, . . .	8,447,000			
1842, . . .	7,237,000		88,000	11
1843, . . .	4,519,000			21
1844, . . .	7,751,000		74,000	23
1845, . . .	6,365,000		102,000	18
1846, . . .	13,061,000		147,000	15
1847, . . .	26,312,000	20,000	234,742	11
1848, . . .	12,631,000	369,000	229,000	9
1849, . . .	not obtained.			

It is here shown that, notwithstanding the rapid growth of manufactures in the period from 1830 to 1834, the export of food was not only maintained but it increased. The tendency to depopulation had diminished, and the power to obtain iron to assist in the work of cultivation had increased. Thereafter, with the increasing tendency to depopulation, as immigration and manufactures and the power to obtain iron became stationary, the production of food so far diminished that the price rose to such a point as to render it profitable to import it; and it may be doubted if, notwithstanding the increase of numbers, the whole quantity produced between 1835 and 1840 was greater than in the five previous years. From 1843, we find it gradually increasing, notwithstanding the vast amount of labour employed in producing coal, iron, cotton and woollen goods, ships, steamboats, &c. How great was the increase may be seen by the following comparison of the returns under the census of 1840, and the Patent Office estimates for 1847:—

	Wheat.	Barley.	Oats.	Rye.	Buckwh't.	Ind. Corn.	Totals.
1840, . . .	84,823,000	4,161,000	123,071,000	18,645,000	7,291,000	377,531,000	615,522,000
1847, . . .	114,245,000	5,649,000	167,867,000	29,222,000	11,673,000	539,350,000	867,826,000
Increase,	29,422,000	1,488,000	44,797,000	10,577,000	4,382,000	161,819,000	252,304,000

We have here an increase of no less than 40 per cent. in seven years, during which the increase of population was but 23 per cent. Equally divided among the whole people, there would be 36 bushels per head in the one case, and 42 in the other; and thus we see that the increase in the facility of obtaining the machinery of cultivation is attended by increase in the product of cultivation; while increase in the power to produce cotton and woollen cloth enables the farmer to obtain for each bushel produced a larger amount of clothing than before.

The net export is as follows, per head of the population:—

1821 to 1829, . . .	·39	1834, . . .	·29	1845, . . .	·33
1830, . . .	·47	1835 to 1841, . . .	·25	1846, . . .	·65
1831, . . .	·71	1842-3, . . .	·31	1847, . . .	1·28
1832, . . .	·32	1844, . . .	·41	1848, . . .	·60
1833, . . .	·35				

We see, thus, that with the exception of the year of the famine in Ireland, it has never reached a bushel per head, and that it has invariably been largest in the periods of protection—those periods in which the largest and most valuable home freights could be obtained. With the approach to free trade the power to maintain trade has diminished; and as we have receded from it and have approached protection, it has increased with the growth of immigration.

The effect of this is seen in the constantly increasing quantity of Canadian produce that passes through New York on the way to England. It is stated that while in 1848 only 50,000 barrels of Canadian flour passed through New York, the quantity in 1849 that came through by the single route of Oswego was 200,000 barrels, and that there were, in addition, 623,000 bushels of wheat. This, being of foreign production, has, of course, to be deducted from the amount of exports; but if the import of MEN should diminish, freights outward must rise, and the tendency to send flour or wheat to market through the ports of the Union will pass away.

What was, prior to the census of 1840, the production of grain, it is not now possible to ascertain; but we know that, in the period from 1830 to 1834, prices were moderate and consumption was large. It is not probable that it was as much per head as was given by the census for 1840, because the increased facilities of transportation in the latter period enabled the farmer to give more of his labour to cultivation. If it be taken at thirty bushels per head, it will probably not vary greatly from the truth. In the following period, production was so small that prices rose to a point that permitted importation from Europe; and the advance so far exceeded that of wages as to cause almost universal disturbance between employers and workmen. It may be doubted if it then exceeded twenty-five bushels per head. By degrees, the tendency to depopulation diminished; and, in 1840, we find it thirty-six bushels, to rise to forty-two in 1847. The same causes that diminished production in 1836 are now again at work. Immense numbers of people are in motion changing their places of labour; and those that have gone to California, New Mexico, the Salt Lake, &c., can scarcely be taken at less than a hundred thousand. These men are not now producers; and thus, while we have this year added to our population 280,000 persons from abroad requiring to be fed, we have exported great numbers who have not only ceased to be producers, but have taken with them vast quantities of food. It may fairly be doubted if the product of this year, per head, exceeds thirty-eight to forty bushels; and hence it is, in part, that the prices are even thus far maintained. Nevertheless, there is a gradual tendency to a fall of prices, showing a power of consumption diminishing in a greater ratio than that of production.

That the power to obtain food in return to labour diminished greatly between 1835 and 1839 must be within the recollection of all who were familiar with the events of that period. Never has there been experienced in this country so much anxiety relative to the result of the harvest as was felt in 1838. From that time, the tendency to dispersion diminished; and, in 1839 and 1840, labour commanded good supplies of food, as is obvious from the fact that immigration rose, attaining, in 1841-2, the height of 101,000. The value of labour and food had, however, by that time greatly fallen, and,

in 1842, it fell to a lower point than had been known for twenty years, the consequence of which was, a great diminution in the immigration of the two succeeding years. Thence to 1847, the increase was very rapid; but, in the following year, it became stationary, and is now falling rapidly.

We may now proceed to the next great article of food—

SUGAR.

	Foreign.	Crop of Louisiana.	Total.	Per head.
1821 to 1829, ...	57,000,000	45,000,000	102,000,000	9
1830, ...	96,000,000	75,000,000	171,000,000	13 $\frac{1}{3}$
1831, ...	69,000,000	75,000,000	144,000,000	11
1832, ...	48,000,000	70,000,000	118,000,000	8 $\frac{2}{3}$
1833, ...	97,000,000	75,000,000	172,000,000	13
1834, ...	115,000,000	110,000,000	225,000,000	15 $\frac{1}{2}$
1835 to 1841, 138,000,000 — $\frac{1}{5}$,	110,000,000	100,000,000	210,000,000	13
1842 and 1843, ...	114,000,000	120,000,000	234,000,000	12 $\frac{3}{4}$
1844, ...	182,000,000	205,000,000	387,000,000	20
1845, ...	114,000,000	184,000,000	300,000,000	15 $\frac{1}{2}$
1846, ...	108,000,000	150,000,000	258,000,000	13
1847, ...	232,000,000	246,000,000	472,000,000	23
1848, ...	244,000,000	220,000,000	464,000,000	22
1849,	not obtained.			

We see here a rapid increase of production from 1829 to 1834, and that it then diminished in actual amount until 1844, and that the average of 1847 and 1848 was considerably more than double that of 1842-3. The power to consume foreign sugar has kept steady pace with the increase in the home supply, giving a total consumption for the year 1846-7 exceeding, by more than 150 per cent., that of the period from 1821 to 1829, and almost double that of 1842 and 1843.

The power of producing food thus kept pace with the power to apply labour and capital to the conversion of food and other raw materials into iron, cloth, and other commodities requisite for the use of man; and thus both kept pace with the tendency to the concentration of population. With every increase in the power of production, consumption grew, and the labourer received larger returns for his labour, producing a tendency to immigration. With every diminution in the power of production, the power to pay for foreign commodities diminished, and hence it was that the early years of the approach to freedom of trade were signalized by the creation of a vast debt, the interest on which has now to be paid.

INTERNAL COMMERCE.

We may now examine how far the power to maintain internal trade waxed or waned with the increased or diminished power of production, for which purpose, I give the TOLLS on the three principal routes between the east and west, and the TONNAGE that passed through the Louisville and Portland Canal. In examining them it will be proper to bear in mind that the receipts from immigrants from Europe, in the last two years, have been prodigious, notwithstanding which there has been a large decrease in the two from which I have been able to obtain complete returns. It follows, of course, that the receipts from merchandise have greatly diminished in their ratio to population. Should immigration continue to fall off, the deficiency in the receipts from these works will become of serious importance to the treasuries of both New York and Pennsylvania.

TOLLS.

	New York Canal.	Per 1000 of population.	Baltimore and Ohio Railroad.	Per 1000 of population.	Penn. Canals.	P. 1000 of population.	Ton'ge, L. & P. Canal.
1826,	\$844,000	\$73					
1827,	880,000	74					
1828,	829,000	68					
1829,	815,000	65					
1830,	1,042,000	81					
1831,	748,000	56	\$31,000				76,000
1832,	1,112,000	81	137,000	9.9			70,000
1833,	1,388,000	98	196,000	13.9	148,000	10.5	170,000
1834,	1,381,000	95	205,000	14.1	306,000	21.1	162,000
1835,	1,482,000	99	263,000	17.6	679,000	45.4	200,000
1836-41	1,655,000	102	349,000	21.5	1,020,000	60.7	223,000
1842,	1,749,000	97	426,000	23.6	903,000	50.0	172,000
1843,	2,081,000	112	575,000	31.0	1,014,000	55.0	232,000
1844,	2,446,000	128	658,000	34.6	1,164,000	61.5	304,000
1845,	2,646,000	135	718,000	37.7	1,154,000	59.1	318,000
1846,	2,756,000	138	881,000	44.0	1,357,000	68.0	341,000
1847,	3,635,000	177	1,101,000	54.0	1,587,000	78	307,000
1848,	3,252,000	155	1,213,000	60.0	1,550,000	73.3	341,000
1849,	3,266,000	150			1,580,000	72.4	

The LAKE TONNAGE in 1834 was 28,521 tons.

In 1841 it had risen to only 56,252

1846 it was 106,836

1847, ... 139,399

1848, ... 166,400

We thus see that it increased less than 28,000 tons in the first period of seven years, it has gained 110,000 in the last, and nearly all of this since 1843. At the present time there is no tendency to increase. The great support of this trade is found in the transport of immigrants, and any diminution therein must be followed by a diminution in the tonnage.

In 1842, the STEAMBOAT TONNAGE on the western rivers was but 126,278, and the tendency was downward, as the business was very small, as may be seen from the number of trips made by certain boats:—

	Boats.	Trips.		Boats.	Trips.
1839,	35	141	1841,	32	162
1840,	28	147	1842,	29	88

In 1846, only four years afterwards, it had almost doubled, the amount being 249,055. In the two succeeding years it increased rapidly, as may be seen by the following statement of boats built at Cincinnati:—

1845-6, 5657 tons. | 1846-7, 8268 tons. | 1847-8, 10,232 tons.

In the last year the tendency has been downward; the boats built being only 7281 tons; and the number of arrivals being only 3239, against 4007 in the previous year.

We thus meet everywhere the same results. From 1836 to 1843, scarcely any increase; but from that date every thing starts into life and grows with rapidity. Arrived at 1848 and 1849, all tends downwards, notwithstanding the great increase of population.

TRADE OF NEW ORLEANS.

The value of the principal products of the interior received at New Orleans, from 1841-2, to the present time, has been as follows:—

		Total.			Total.
1841-2,	.	\$45,716,045	1845-6,	.	\$77,193,464
1842-3,	.	53,782,084	1846-7,	.	90,033,000
1843-4,	.	60,094,716	1847-8,	.	70,779,000
1844-5,	.	57,166,122	1848-9,	.	81,889,000

The value doubled in six years, but it is now falling, notwithstanding the large increase of western population in the last two years.

NEW YORK

Being the place supposed to be most benefited by perfect freedom of trade, we may profit by an examination into the effect of the various systems, as exhibited in the number of houses built in that city, as compared with the population of the country, of which it is the commercial capital. The earliest account I have been able to obtain is that of 1834:—

		Houses built.	Per million of population.			Houses built.	Per million of population.
1834,	.	877	60	1845,	.	1980	101
1835-41, average,	.	943*	58	1846,	.	1910	95
1842,	.	912	50	1847,	.	1823	90
1843,	.	1273	69	1848,	.	1191	60
1844,	.	1210	64				

The rapid extension of Brooklyn has been since 1842. Had it been possible to obtain a similar account of that city, which is but a suburb of New York, the difference would have been much more striking. We have here, however, all that is needed to show that houses in New York grew with the growth of factories and furnaces, and diminished, as they now diminish, with the cessation of their operations.

PHILADELPHIA.

It is deemed desirable to give the movement of PHILADELPHIA as the distributor of a large portion of the coal and iron of the Union, and as the centre of an important portion of the commerce between the East and the West; but it is impossible to obtain the number of houses built, because of no such record having been preserved, by several of the districts, until quite recently, and to give the movement of the population in the several periods, it is necessary to take the returns under the State censuses, which are septennial, and those made under the authority of the federal government, which are decennial. The former returns give only the number of taxables, but by multiplying them by five the population was always found to be nearly obtained, and I have done so throughout, although it is said that the proportion of non-taxables has within a few years so far increased as to make it necessary to multiply by five and a half. How far that is the case will be determined by the census of next year.

		Taxables.	Population.	Per cent. per annum.	Ratio to population of the Union, in thousands to millions.
1821.	State census	27,892	139,460	.	15.3
1828.	"	37,313	186,565	increase 4.9	15.2
1830.	U. S. "	.	188,958	" .6	14.6
1835.	State "	49,847	249,235	" 6.6	16.7
1840.	U. S. "	.	258,000	" .8	15.1
1842.	State "	51,063	255,315	decrease .5	14.1
1849.	" "	77,285	386,425	increase 7.4	17.7

* Of these the number built in 1835 and 1836, before the Compromise began to have much effect, was greater than in any three of the other years.

It appears obvious that the productive power of the country diminished from 1835 to 1841, and still more rapidly in the two following years; and therefore it was that the power to pay for foreign commodities diminished so much that consumption could be maintained only by obtaining goods on credit, to be paid for at some future time, and bearing interest until paid. The following table will show the VALUE OF EXPORTS, being the amount of merchandise received from abroad in payment for merchandise and freights.

	Value of exports, per head.	Debt contracted.	Debt paid off.
1821, to 1829, aver., \$5	.	.	.
1830, ...	4.32	.	.
1831, ...	6.10	.	.
1832, ...	5.51	.	.
1833, ...	6.20	.	.
1834, ...	7.08	.	.
1835 to 1841, aver.,	6.02	\$170,000,000	.
1842-3, ...	4.48	Interest unpaid.	.
1844, ...	5.03	.	Interest.
1845, ...	5.16	.	.
1846, ...	5.75	.	\$5,000,000
1847, ...	7	.	5,000,000
1848, ...	5.88	8,000,000	.
1849, ...	5.19	22,000,000	.

With each step in the diminution of the power to produce, there is diminished power of purchase, and hence the necessity for obtaining goods on credit. So it was from 1835 to 1841, and the result was almost universal bankruptcy. So is it at present, and the goal towards which we are moving would seem to be the same. The amount now required for the payment of interest is about \$14,000,000 per annum, being \$2,000,000 more than was required for the same purpose two years since.

In the following table are given two species of articles, of one of which (flax) a large part was freed from duty by the Compromise tariff, and so continued until September, 1841, while the other was subject to the same provisions as manufactures of other kinds. It will be seen how small is the difference of movement, proving that the amount of importation depends upon the *power* to import, and is but slightly affected by the question of duty.

	Manufactures of flax.	Per head.	China and earthenware.	Per head.
Sept. 30, 1821-29, average,	\$3,333,000	29	\$1,160,000	10
" " 1830, ...	3,011,000	23½	1,259,000	10
" " 1831, ...	3,790,000	28½	1,624,000	12½
" " 1832, ...	4,073,000	30	2,024,000	15
" " 1833, ...	3,132,000	22	1,818,000	13
" " 1834, ...	5,485,000	38	1,591,000	11
" " 1835-41, \$6,350,000—½=	5,080,000	31	1,950,000—½=	1,560,000
" " 1842 to } average,	2,900,000	15½	1,300,000	7
June 30, 1843, }				
" " 1844, ...	4,492,000	23½	1,632,000	8½
" " 1845, ...	4,923,000	25	2,166,000	11
" " 1846, ...	4,972,000	25	2,201,000	11½
" " 1847, ...	5,152,000	25	2,320,000	11
" " 1848, \$6,600,000—¼=	5,660,000	27	2,600,000—¼=	2,228,000
" " 1849, not obtained				

* In 1829, the debt of the Federal Government was \$58,000,000. In the year 1833-4, it was reduced to \$4,000,000, and in the following year to \$37,000. As much of this was held abroad, the amount paid off in this period was probably equal to that of States and corporations transmitted abroad at the same time.

We see here the importation of linens increasing under the tariff of 1828, diminishing from 1835 to 1841, and still further diminishing in the closing years of the Compromise tariff. Thenceforward it rises rapidly, notwithstanding the increasing tendency to substitute manufactures of cotton for those of flax.

In regard to China and earthenware, we see the same course of events. The importation rises under the tariff of 1828, diminishes under the Compromise, and still further diminishes in 1842-3, when it begins to rise under the tariff of 1842, but never attains the same height as in the previous period.

FRENCH MERCHANDISE.

		Per head.	
1822 to 1829, average, ...	9,130,000	81	Silks subject to duty.
1830, ...	8,240,000	64	"
1831, ...	14,737,000	1.11	"
1832, ...	12,754,000	92	"
1833, ...	13,962,000	1.00	Silks free.
1834, ...	17,557,000	1.21	"
1835 to 1841, average 25,200,000 — $\frac{1}{3}$, ...	20,160,000	1.24	"
1842 to 1843, average, ...	14,500,000	80	Duties reimposed.
1844, ...	17,952,000	94	"
1845, ...	22,069,000	1.13	"
1846, ...	21,600,000	1.08	"
1847, ...	24,900,000	1.21	"
1848, ... 28,000,000 — $\frac{1}{4}$, ...	24,000,000	1.14	"
1849, ...	not obtained		

We have here the same results as elsewhere. The commodities we receive from France are almost altogether articles of luxury. In the period between 1829 and 1834, there is a gradual increase, until, in 1834, the consumption exceeds by fifty per cent. the average from 1821 to 1829. Thenceforward the amount remains almost precisely the same until we reach 1841. In the period ending June 30, 1843, it falls to the level of fifteen years before. In the following year, it begins to rise, and, by 1847, attains the level of 1834. In 1848 it falls to \$1.14.

The remarkable part of this table is, the small increase produced by the abolition of duty upon silks, and the fact that the import rapidly increased after the duties had been reimposed.

TEA AND COFFEE.

The following table represents the quantities of tea and coffee retained for consumption rather than the actual consumption of the respective years, and the great irregularity of amount is more apparent than real. It is here shown, that the average consumption of tea in the years 1833 and 1834, the last two years in which the tariff of 1828 was in activity, was greater than that of the ensuing ten years, and that, notwithstanding the great increase of population, it did not rise above that quantity until 1845. Of coffee the consumption per head was little greater from 1835 to 1841 than the average of 1833-34.

	Tea.	Per head.		Coffee.	Per head.
1821 to 1829, average, pounds, 6,000,000		·53	pounds, 24,000,000		2·13
1830, ...	6,800,000	·53		38,300,000	3·00
1831, ...	4,600,000	·35		75,000,000	5·60
1832, ...	8,600,000	·63		36,000,000	2·60
1833, ... (Duty free,)	12,900,000	·91	(Duty free,)	75,000,000	5·30
1834, ...	13,100,000	90		44,000,000	3·00
1835 to 1841, 12,600,000 — $\frac{1}{5}$,	10,080,000	·62	89,000,000 — $\frac{1}{5}$,	71,200,000	4·40
1842–1843, ...	13,000,000	·71		107,000,000	5·60
1844, ...	13,000,000	·68		149,000,000	7·85
1845, ...	17,100,000	·88		94,000,000	4·82
1846, ...	16,800,000	·84		124,000,000	6·20
1847, ...	14,200,000	·70		152,000,000	7·25
1848, ...	21,000,000	1·00		145,000,000	6·90
1849	not obtained			not obtained	

The great question to be settled is—"Which is the system under which the labourer is enabled to obtain the largest quantity of food, fuel, clothing, machinery of production and transportation—protection or free trade?" The former is denounced as a "war upon labour and capital," and yet it seems clear that the power to consume all those things for which men are willing to labour, and in the production of which other men are willing to invest capital, was greater under the two protective tariffs than at any other period, and that it is now gradually, but certainly, diminishing. Wages are falling, and the result is, a diminution of immigration, and an increasing tendency to emigration, both accompanied by a decrease of productive power, to be followed by a further decline of wages, and a further increase of emigration. Shipping has grown with immigration, and freights have fallen, but, with diminution in the former, the latter must rise, and many of the commodities that we have recently exported will have to remain at home, and thus there will be a diminished power of importation, accompanied by a diminution of the public revenue, the improvement of which was one of the objects proposed in the adoption of the policy of 1846. How the different systems have thus far operated upon the receipts from import duties will be seen by an examination of the following table.

CUSTOMS REVENUE,

Derived from the import of Merchandise paid for with our Exports.

		Per head.
1821 to 1829, average, ...	18,500,000	1·69
1830 to 1834, ...	24,000,000	1·75
1835 to 1841, average, ...	\$17,170,000	
Less one-fifth, for goods bought in exchange for certificates of debt, ...	3,404,300	
1842 and 1843, ...	13,736,000	0·84 $\frac{1}{2}$
1843–4, ...	16,400,000	0·90
1844–5, ...	26,183,000	1·38
1845–6, ...	27,528,000	1·41
Add duty on \$5,000,000 of debts redeemed, ...	1,500,000	
1846–7, ...	23,747,000	
Add duty on \$5,000,000 of debts redeemed, ...	1,500,000	
1847–8, ...	25,247,000	1·23
1847–8, ...	31,757,000	
Deduct duty on the amount of debt created, say \$8,000,000, ...	2,400,000	
1848–9, ...	29,357,000	1·40
Debt created, \$22,000,000—duty, ...	28,346,000	
	6,600,000	
	21,746,000	1·00

It is here seen, that the importation of duty-paying articles increased so much under the tariff of 1828, that the revenue per head was greater than in the previous period, although the duty on railroad iron and on tea and coffee was abolished in 1832. The case would, however, appear much stronger were allowance made for the movements of specie. The period from 1821 to 1829 was one of great exhaustion, and the exports of specie exceeded the imports by an average of almost one million a year; whereas, the imports of the following period exceeded the exports by an average of five millions a year. The total difference is therefore six millions a year. Had this been imported, as in the previous period, in the form of duty-paying articles, and had the duties on tea and coffee been retained, the revenue would have exceeded two dollars per head.

With the next period, we find a great decrease in the revenue, indicating a diminished power to pay for foreign merchandise, resulting from diminished productiveness in the application of labour at home.

With 1842-3, there is a trifling increase, resulting from the action of the tariff of 1842, which was in operation during the last nine months of this short period.

From June, 1843, to June, 1846, the amount rises to an average of \$1.40, and maintains itself during the first three years of the period. The passage of the act of August, 1846, connected with the warehousing system, tended to reduce the amount received into the treasury in the last year of this period.

With 1848, we find the average maintained, without, however, the increase that might naturally have been looked for in consequence of the great demand for breadstuffs, consequent upon the failure of the potato-crop in Ireland.

In the last year (1848-9), being the second in which the tariff of 1846 was in action, the amount of revenue derived from merchandise *paid for by our exports* has greatly declined.

In comparing the receipts under the tariff of 1842 with those of that of 1828, it is necessary to bear in mind, that, in the latter period, before merchandise could be purchased, there was a sum of ten millions of dollars to be provided for payment of interest on the debt incurred in the free trade one. At thirty per cent., that would have given three millions of dollars, or about fifteen cents per head.

The total amount of interest now to be paid is about fourteen millions of dollars, and this claim must be discharged by our exports before merchandise can be purchased: the consequence of which must be, a great deficiency in future revenue.

With these facts before us, we may now examine the different revenue systems that have been presented for consideration and adoption. By the English school it is held that, as cultivation first commences on the richest soils, agricultural labour is then largely paid, and the diversion of any portion of the population to mechanical pursuits is attended with loss. Observation, however, shows that the first cultivator commences, invariably, on the poorer soils, and that the rich lands of river bottoms, the underlying beds of marl, limestone, &c., are only brought into cultivation at a later period. The English school holds that mechanical labour must necessarily, because of the abundance of fertile land and consequent profitable application of labour, be dearer in a new than in an old country, and that competition can be maintained only by aid of laws restricting importation. It holds that double loss results from such restriction, labour being withdrawn from the profitable pursuit of agriculture to be given to the comparatively unprofitable one of converting agricultural products into the

various commodities required for the use of man: also, that these persons, thus unprofitably employed, are maintained out of taxes imposed upon the consumers of their commodities, and that every dollar paid to the government on the import of articles, in part manufactured at home, is accompanied by the payment of five, ten, fifteen, or twenty dollars paid to a selected class, thus living by taxation imposed on their neighbours for their support. This idea may be found fully carried out in a report of the late Secretary of the Treasury, for 1846. It is there shown, that all the coal consumed in the Union costs the consumer \$1.60 *more* than it would do under a system of free trade, although the average price of all the coal sold at Pittsburgh, Wilkesbarre, Mauch Chunk and Pottsville did not, at that moment, exceed \$1.50.

To relieve the consumer from this double taxation, the English school holds that all duties for revenue should be imposed upon articles that cannot be produced in the country, such as tea, coffee, &c., and that all those that can be produced in it, should be admitted free. Such is the theory that dictated the tariff of 1846, and the subsequent efforts to amend it by the imposition of a duty on tea and coffee.

The other school holds that articles which can be produced at home should be protected, while those which cannot should be admitted free of all duty, and such was the view which prompted the abolition of all duties on tea and coffee, by the act of 1832.

By the working of the two systems, their value is to be judged. In the first eighteen months of the tariff of 1832, tea and coffee were admitted free of duty, with a loss to the revenue of nearly three and a half millions of dollars per annum, to which was to be added a great loss of duty on silks, also free; but the protection of manufactures generally was maintained, and the consumption of foreign merchandise liable to duty continued so great, that the revenue increased more rapidly than the population. In the succeeding period, protection gradually diminished, with a certainty of its total disappearance as the Compromise bill should come fully into action, and the productiveness of labour became so far diminished, that the payment into the Treasury for duties on foreign merchandise fell to an average of less than one-half of what it had been from 1829 to 1834.

With the tariff of 1842, it rose gradually, and with a steady upward tendency; while, as that of 1846 comes into operation, there is a movement directly the reverse.

PUBLIC EXPENDITURE.

When men live in connection with each other, they are enabled to protect themselves, and have little need of fleets or armies for their protection. A few officers can then perform the duties incident to the maintenance of government. They then exercise, in a high degree, the power of self-government.

When they are widely separated from each other, they are unable to protect themselves, and have need of fleets and armies for their protection. Many officers are then required for the performance of the duties of government, and the power of self-government is diminished.

With the increase of fleets and armies, and of government officials, the cost of government is increased.

The policy of 1828, and that of 1842, tended, as we have seen, to concentration of population and combination of exertion, and, therefore, to increase in the power of self-government. That of 1833 tended, and that of 1846 tends, as has been seen, to dispersion of population and diminution in the power of combination, and, consequently, to diminution in the power of self-

government. What has been the effect of the two systems on the public expenditure I propose now to show. The true "war upon labour and capital," is that which increases the cost of government, and thus diminishes the power to accumulate capital, to be used in aid of labour. Every step towards diminution in the expenditure for that purpose tends to raise wages; and every one tending towards its increase, tends equally towards diminution in the power of both labourer and capitalist to command the necessaries, conveniences, or luxuries of life.

From 1821 to 1829, the total expenditure of the government, exclusive of payments on account of debts previously existing, was \$117,000,000, being an average of \$13,000,000

From October, 1829, to October, 1834, the period of the tariff of 1828, the total expenditure, exclusive of such payments, was 84,000,000, being an average of 16,800,000

From October, 1834, to October, 1841, the period of the Compromise, during which we colonized Texas and Oregon, the total expenditure was \$223,000,000. In this period there were no payments on account of the old debt, the whole having been extinguished at the close of 1834. The average of this period of dispersion was 31,700,000

From October, 1841, to June 30, 1843, was a period of exhaustion, and the wants of the government were such as precluded expenditure. The average was 20,400,000

That of 1843-4 was 20,600,000

That of 1844-5, ... 21,400,000

With 1845-6, we recommence the system of dispersion. The occupation of Texas had brought with it war with Mexico, and the expenditure rose to 26,800,000

In 1846-7, dispersion increased, and large armies were sent to Mexico for the purpose of compelling the cession of California, the consequence of which was that the expenditure rose to 59,400,000

In 1847-8, it was 45,000,000

And a large amount remained unsettled.

In 1848-9, ... 46,798,000

As a necessary consequence of this system, the public debt, which was extinguished under the system of concentration, grew rapidly under that of dispersion, to be again diminished under that of concentration, and now again increased under that of dispersion.

PUBLIC DEBT.

1821,	\$89,987,428		
1829,	58,421,414	Decrease in eight years,	\$31,566,014
1834,	4,760,082	" five years,	53,661,332
1834-5,	37,733	Extinguished.	
1841,	6,737,398	Increase in five years,	6,737,398
June 30, 1843,	26,898,958	" two years,	20,161,560
" 1845,	17,093,794	Decrease in two years,	9,805,164
" 1848,	48,526,379	Increase in three years,	31,433,585
" 1849,	64,704,693	" one year,	16,178,314

CREDIT.

With every step in the diminution of debt, credit grows; with every one in the increase thereof, credit diminishes.

The policy of 1828 increased production and raised wages. The power to

pay for foreign commodities was great, and the revenue was large, the consequence of which was the extinction of the public debt, at the close of 1834. Credit was therefore high.

The policy of 1832-3 diminished production and lowered wages. Credit was high, and we obtained cloth and iron in exchange for certificates of debt; the consequence of which was, that, at the close of 1841, the foreign debt was two hundred millions, much of the interest of which we were unable to pay.

Under the Revenue tariff of 1841-2, public and private revenue almost disappeared, and bankruptcy and repudiation were the necessary consequence.

Under the tariff of 1842, production increased and wages rose. The power to pay for foreign commodities increased, public and private revenue grew, and we commenced to diminish our debt, the consequence of which was the perfect re-establishment of credit.

Under the tariff of 1846, production diminishes and wages have fallen. The power to pay for foreign commodities is diminishing, and we are again buying cloth and iron, and settling for them with certificates of debt, the amount of which transmitted to Europe in the two years ending June 30, 1849, is estimated at thirty millions of dollars; all of which we have, in that time eaten and drunk, and used, but have yet to pay for.

With a view to present at a glance the results obtained by this examination of the policy of the Union, I give the following diagrams, in which the movement under the various systems is distinctly shown.

No. I. gives the nine years from 1821 to 1829, when the tariff of 1828 came into operation.

No. II.—The years of the protective tariff of 1828, from 1829 to 1834.

No. III.—Those of the Compromise tariff, from 1834 to 1841. In this case, it will be observed that I have in all cases deducted from the consumption of imported commodities one-fifth, that being the quantity obtained in exchange for certificates of debt.

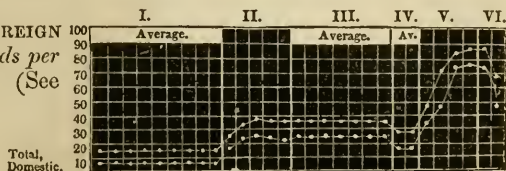
No. IV.—This represents the movement under the strictly revenue clauses of the Compromise tariff. In some cases, as will be seen, one year, and in others two years are included in this period. The returns for coal, railroad and canal tolls, &c., are made from the civil year, whereas those connected with commerce are made for the fiscal year ending June 30. The effect of taking one year, is to throw into No. III., the period of the Compromise, one-half portion of this period, and the other portion into No. V., the period of the tariff of 1842.

No. V.—The tariff of 1842.

No. VI.—That of 1846.

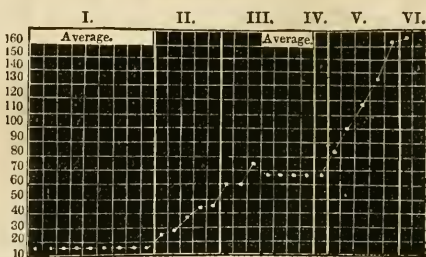
In the diagram representing the movements of iron, coal, cottons and woollens, the consumption is given in two sets of lines; one representing the domestic products consumed, and the other the total quantity. An examination of them will show, that the amount of consumption is dependent upon that of domestic production, and that any deficiency therein is *never* compensated by increase of importation, as it should be, if the theory is true upon which the tariff of 1846 is based.

CONSUMPTION OF IRON, FOREIGN AND DOMESTIC, in pounds per head of the population. (See page 390.)



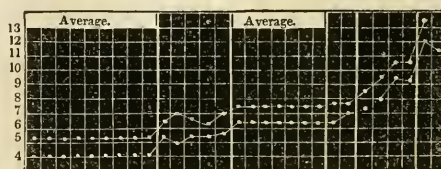
Railroad iron was exempted from duty in the third year of the second period, and from that time consumption ceased to increase.

CONSUMPTION OF COAL, FOREIGN AND DOMESTIC, in tons per thousand of population. (See page 392.)



CONSUMPTION OF COTTON GOODS, FOREIGN AND DOM. in pounds per head of the population. (See page 394.)

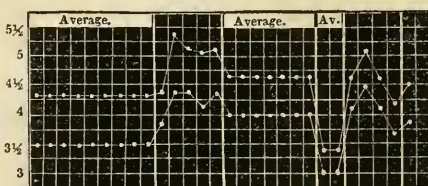
Total,
Domestic,



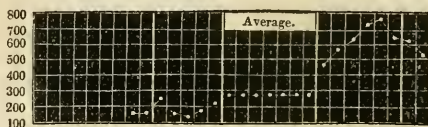
CONSUMPTION OF WOOLLENS, FOREIGN & DOM., in lbs. per head of population. (See p. 396.)

Total,

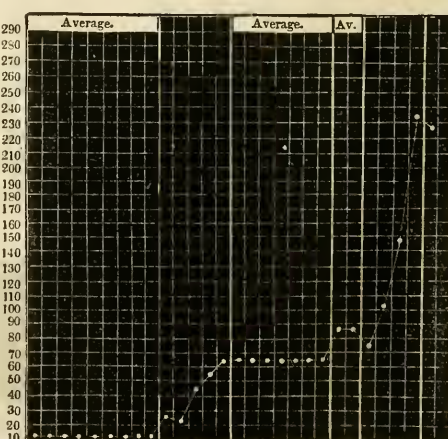
Domestic, 3½



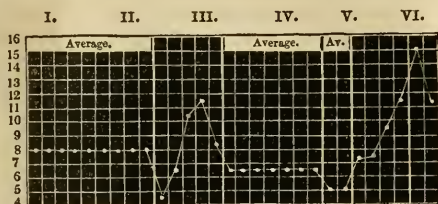
PRODUCTION OF LEAD, in thousands of pigs. (See page 397.)



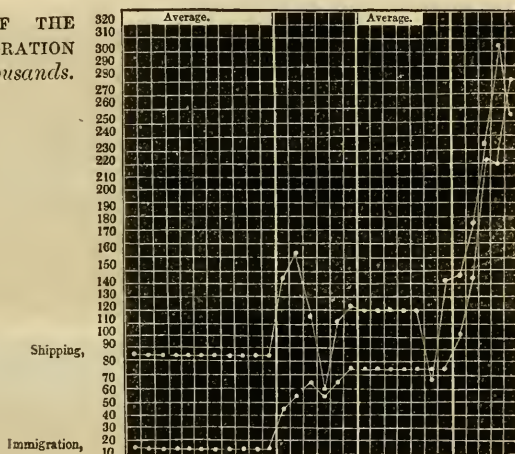
POPULATION, as shown in the increase of immigration, in thousands. (See page 397.)



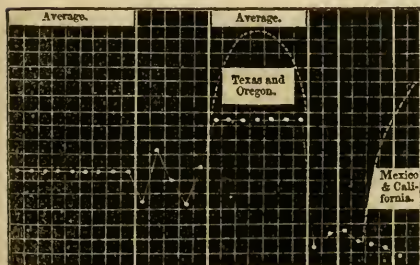
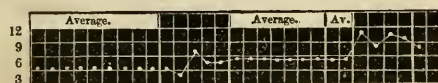
SHIPPING BUILT, in tons, per thousand of population. (See page 398.)



COMPARATIVE VIEW OF THE MOVEMENT OF IMMIGRATION AND SHIPPING, in thousands. (See page 398.)

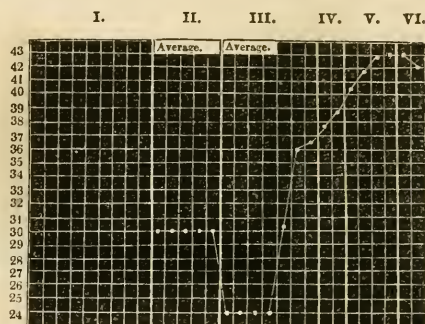


NUMBER OF STEAMERS BUILT, per million of population. (See page 398.)

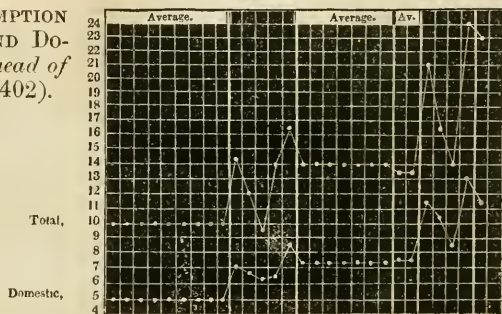


DEPOPULATION, as shown in the occupation of PUBLIC LANDS, as compared with immigration. (See page 399.)

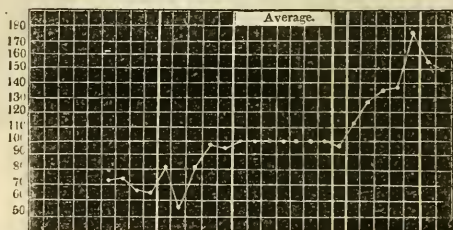
PRODUCTION OF GRAIN, in bushels per head of population. (See page 400.)



PRODUCTION AND CONSUMPTION OF SUGAR, FOREIGN AND DOMESTIC, in pounds per head of population. (See page 402).



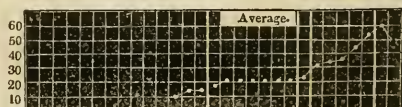
TOLLS ON THE NEW YORK CANALS in dollars per thousand of population. (See page 403.)



TOLLS ON PENNSYLVANIA PUBLIC WORKS, in dollars per thousand of population. (See page 403.)



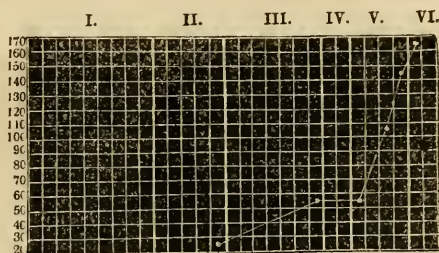
TOLLS ON BALTIMORE AND OHIO RAILROAD, in dollars per thousand of population. (See page 403.)



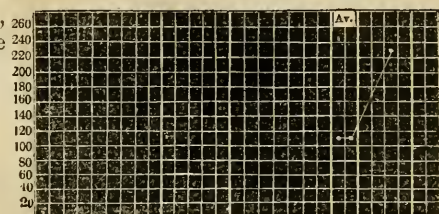
TRADE ON LOUISVILLE AND PORTLAND CANAL, in thousands of tons (See page 403.)



LAKE TONNAGE, *in thousands of tons.* (See page 403.)



WESTERN STEAMBOAT TONNAGE, *in thousands of tons.* (See page 403.)



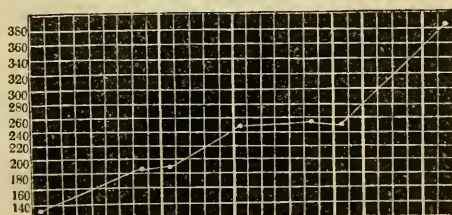
VALUE OF PRODUCE RECEIVED AT NEW ORLEANS, *in millions of dollars.* (See page 404.)



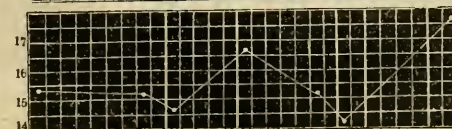
HOUSES BUILT IN NEW YORK, *per million of population.* (See page 404.)



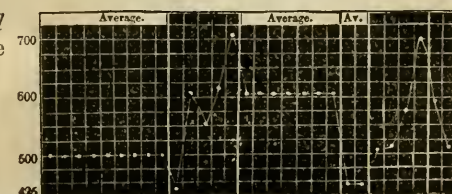
POPULATION OF PHILADELPHIA, *in thousands.*

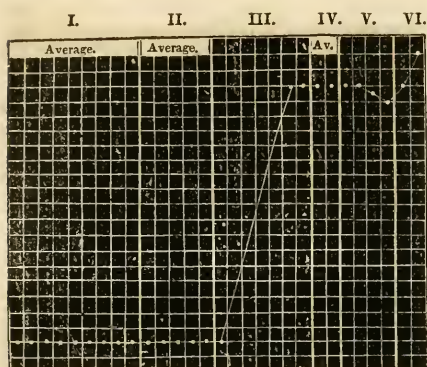


RATIO OF PHILADELPHIA TO THE POPULATION OF THE UNION, *in thousands to millions.* (See page 404.)



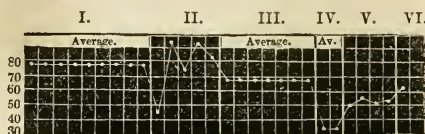
VALUE OF EXPORTS, *per head of population in dollars.* (See page 404.)





FOREIGN DEBT, in millions of dollars. (See page 404.)

IMPORTS OF FOREIGN COTTON GOODS, paid for by our exports, in cents per head of the population. (See page 394.)

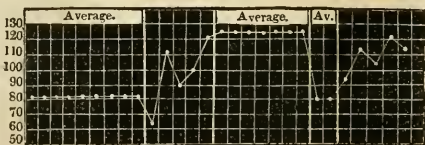


IMPORTS OF FOREIGN WOOLLENS, paid for by our exports, in cents per head of the population. (See page 395.)

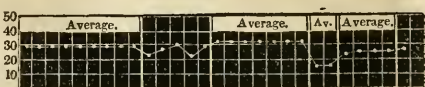


Of the four next following, the first two, French Merchandise and Manufactures of flax, were in a great degree freed from duty in 1832, silks and linens being declared absolutely free. The duty was reimposed in 1841. The others, Tea and Coffee, were free from duty in 1832, and so remain. The first two are given chiefly for the purpose of showing how small is the increase of consumption consequent upon a remission of duty, compared with that which, in every case, we have seen to follow the production of a commodity at home.

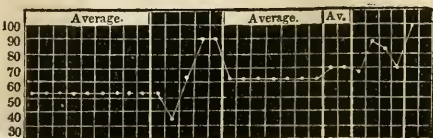
FRENCH MERCHANDISE, paid for in cents per head of the population. (See page 405.)



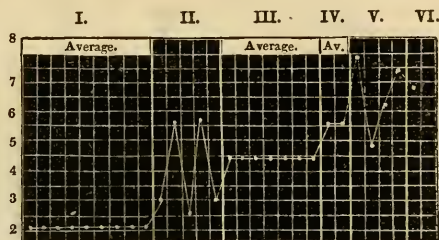
MANUFACTURES OF FLAX, in cents per head of the population. (See page 405.)



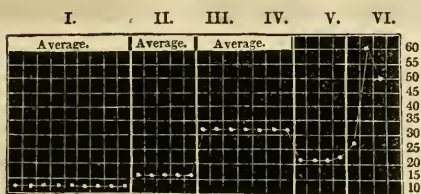
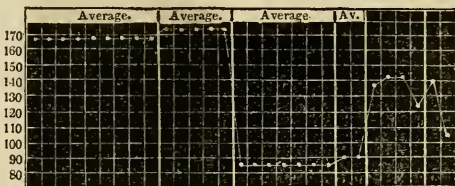
CONSUMPTION OF TEA, in hundredths of pounds per head of the population. (See page 406.)



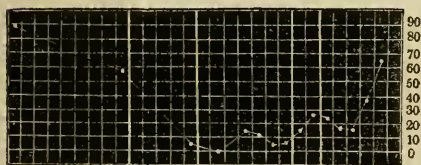
CONSUMPTION OF COFFEE, in pounds per head of the population. (See page 406.)



REVENUE FROM CUSTOMS, in cents per head of the population. (See page 407.)

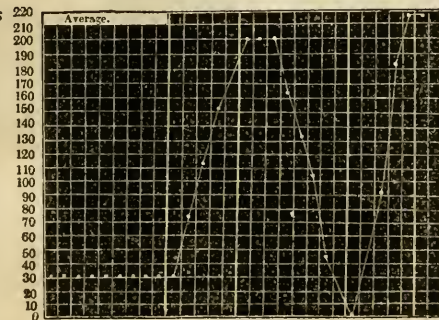


PUBLIC EXPENDITURE, in millions of dollars. (See page 409.)



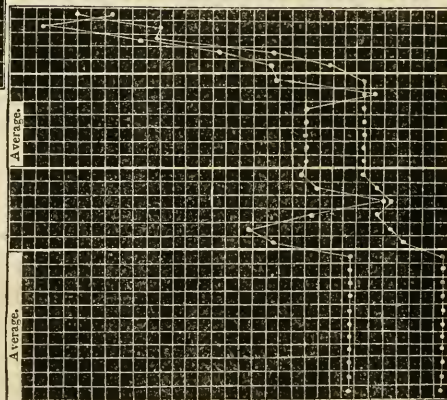
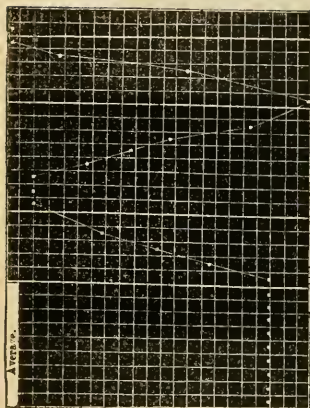
PUBLIC DEBT, in millions of dollars. (See page 410.)

NATIONAL CREDIT, in millions of dollars. (See page 410.)

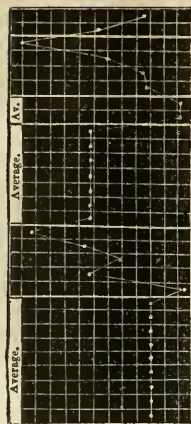


NATIONAL

CREDIT.



Power
TO
MAINTAIN
EXTERNAL
COMMERCE.

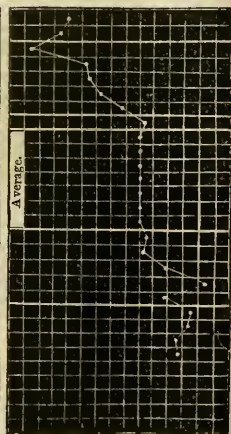


Value
OF
EXPORTS.

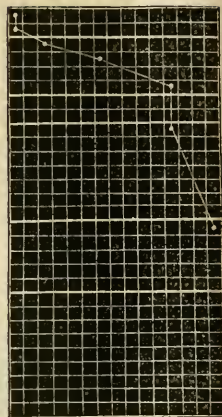
SHIPPING
AND
IMMIGRATION.



Growth
OF
NEW YORK.

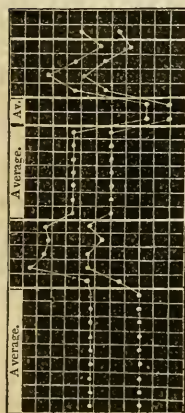


Tolls
ON
NEW YORK
CANALS.

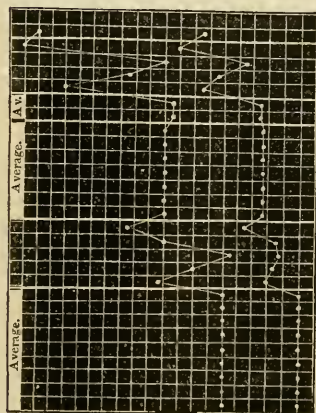


Lake
Shipping

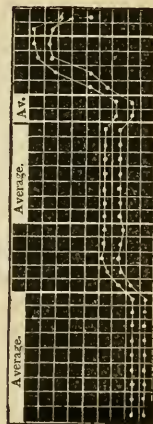
WOOLLENS.



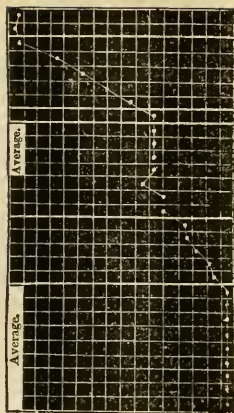
Power
TO
OBTAIN FOOD
AND
CLOTHING
IN
EXCHANGE
FOR
LABOUR.



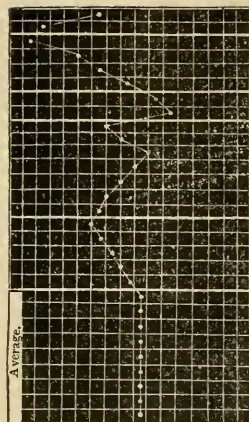
SUGAR.



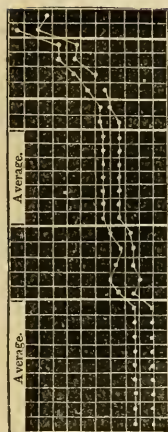
IRON.



COAL.



GRAIN.



COTTONS.

EXHIBIT OF THE QUANTITY AND VALUE OF WOOL

IMPORTED ANNUALLY, FROM 1821 TO 1849 INCLUSIVE.

Years ending		WOOL IMPORTED.		Years ending		WOOL IMPORTED.	
		lbs.	Value.			lbs.	Value.
Sept. 30,	1821,	384,333	93,829		1836,	12,687,621	1,270,126
	1822,	1,733,420	387,312		1837,	10,407,699	893,873
	1823,	1,674,348	340,956		1838,	6,968,363	532,971
	1824,	16*	355,034		1839,	7,925,173	699,538
	1825,	25*	569,476		1840,	9,898,740	846,076
	1826,	20*	449,725		1841,	15,006,410	1,091,953
	1827,	19*	408,527		1842,	11,420,952	797,382
	1828,	4,081,006	612,151	June 30,	1843,	3,568,159	248,679
	1829,	1,494,439	239,882		1844,	14,908,408	851,460
	1830,	669,883	96,853		1845,	23,833,040	1,689,794
	1831,	5,622,960	1,288,909		1846,	16,558,247	1,134,226
	1832,	4,042,838	698,721		1847,	8,460,005	555,822
	1833,	950,205	240,892		1848,	11,381,429	857,034
	1834,	2,341,313	667,925		1849,	17,869,022	1,177,347
	1835,	7,290,397	1,087,277				

* 1824, '5, '6 and '7, quantities not returned by collectors.

ON THE USE OF OIL-CAKE AND LINSEED IN
FATTENING CATTLE.

Will some one inform us whether the cheapness and the virtue of Indian corn in the United States is sufficient to account for the *non-user*, comparatively speaking, of oil-cake and linseed in our country, in feeding cattle and sheep?

Meanwhile we just add the following methods of using linseed and beans along with other farm-produce as food, which have proved profitable in our experience. In the first case, the object was to induce a large consumption of straw; and we believe that in the conversion of this into meat, rather than as litter into manure, there is the opportunity on most farms of adding considerably to farm returns. Two pounds of linseed meal and a handful of salt were boiled in an ordinary sized bucketful of water, and this was thrown hot over about forty pounds of chaff, as much as two oxen could eat in a day, and the mess was served up three times a day to the animals; in addition to which, they had about twenty pounds of turnips daily a-piece at mid-day: they did not fatten rapidly, but were kept in a thriving condition during winter, and increased materially in value on food most of which would otherwise have been converted into manure, with probably great waste of its substance in the dung-heap.

In the second method, twice this quantity of linseed was boiled and thrown over about half this quantity of chaff, and over that from eight to ten pounds of bean meal were dusted. This was served up to two fattening oxen (full-grown Herefords) in two meals, at 10 A.M. and 3 P.M. And, besides this, they had one cwt. a day of turnips each, given at morning and night. The result here was the growth of beef enough to pay all expenses of bought food and attendance, and nine shillings a ton towards the cost of the green food consumed. In both cases the result was profitable; for in both there was a successful attempt to suit the character of the food to that of the animals to be fed—the former were cross-bred young cattle, by no means kindly feeders—the latter, well-bred three-year-old Hereford oxen.—*English Paper.*

COTTON MILLS BY COTTON GROWERS.

EXPORT DUTY ON RAW COTTON.—PRICE OF COTTON.

BY MARK R. COCKRILL.

THE following article, which comes to us from a planter of Tennessee, contains matters of infinite importance not only to the cotton growers, but to the whole people of the Union, for the interest of all are one and the same. All would profit equally by the national adoption of a system that should proclaim to the world our determination that the time had ceased for the cotton to go to the loom, and that the loom must now come to the cotton. The basis of that system should not, however, be a prohibition of export. Other measures, working more gradually, would produce the effect more certainly and advantageously, as we shall have occasion to show. Whatever they may be, it is essential that they look to the growth of consumers of cotton cloth, as well as that of producers of cloth, and the latter are to be found among prosperous farmers, labourers, coal and iron miners, mechanics, &c. The interests of all are in perfect harmony with each other.

COTTON is the leading and controlling staple of the South, embracing nine States of the thirty, of the United States, and, therefore, worthy of consideration and study, by all who feel an interest in the prosperity of this end of the Union.

For seven years past, the labour of cotton growers has been sacrificed, and the prospect of a fair remuneration for the growing crop will pass away before another comes into market; leaving the future as a counterpart of the past, with a tendency to get worse, unless a remedy be applied.

The only safe and substantial remedy is to put up the *cotton mills* among the cotton fields. The great bulk of the crops, when put into market, is classed as "inferior, ordinary," and a small portion "middling;" and these classes have not averaged to the planters more than six cents for seven or eight years past, and some crops have been sold, during this period, as low as 4 c. per pound.

A continuation of these prices will soon create a necessity for a remedy for these low rates, which are not a compensation for the immense labour required in the cultivation of cotton. Under the present plan, the planter's labour, composed of the "sweat of his brow" and the substance of his soil, baled up as *raw cotton*, is shipped off annually 4000 miles to cotton mills in foreign countries, but chiefly to England, at an expense of eight or nine dollars per bale, which is charged to the grower, when the account of sales is furnished from the mill.

If this tax to get to mill was the only evil, it might be yet endured for a while; but there is, in reality, but one great cotton mill, and that belongs to England; and her agent sits at Liverpool, and sees our labour, in bales of *raw cotton*, piled up around him, till it will cover a ten-acre field. The reports of that market will show a stock, sometimes of a million of bales, then stored in Liverpool unsold; with a knowledge of the fact that it cannot be taken anywhere else. The grower has no remedy. *There* are the *spindles*, and *there* it must stay, and the agent of this tremendous English mill says, "I will pay you 3½d. per pound for your cotton," and it is sold. An account of sales is sent to the planter, in £. s. d., in red ink, with double entries; and when translated into English, he finds that his part is 4 c. per pound.

Cultivators of this great staple know that such prices are no compensation for the immense labour required in its growth. They know it is a *sacrifice*, which looks to ruinous consequences, because the substance of their lands is annually wasting away by continued cultivation.

The remedy which is now insisted on, is, for the *planters themselves* to "resolve" that the cotton mills shall be brought to the *cotton fields*:—that they have been paying toll to the English mills long enough. Make the *resolve*, and the ways and means will be readily pointed out, for effecting the end proposed. The cotton fields of the United States, extending from the Atlantic to the Rio Grande, embrace in their wide extent 500,000 square miles. The interest of *all planters* in this great cotton field is the same. State lines are imaginary, when the sacrifice of cotton-growing labour is the question; and old issues in politics may rest in forgetfulness, and the whole South may act as one State, in giving a prosperous direction and division to the labour of the best trained, most efficient, and regular force of workers on the face of the globe. This splendid force of labourers, if directed by skill and wisdom, will yet make brilliant the prospects of the Southern end of our Union. But a part of this force must be taken from the soil and put into the mills.

The spindles and looms must be brought to the cotton fields. This is the true location of this powerful assistant of the grower. In the *West*, in the East, or in the North, would be better than any foreign country; but the *best* location is the sunny South, where the cotton grows. The next best location is in the provision regions nearest the South.

To fix the public mind on the importance of this change, its necessity indeed, and to compel planters to investigate it, it is proposed that they as a body petition Congress to propose an amendment to the 9th article of the Constitution of the United States, which prohibits a "duty on exports from any State;" and when amended, that they pass a law, that \$5 per bale be paid into the treasury of the United States, upon all *raw cotton* shipped after the year 1860.

This would be evidence of a determination among them, and ten years' notice to the world that they would no longer go 4000 miles to mill with their cotton.

An average crop now of United States is about 2,300,000 bales, which at 6 cents is \$55,000,000. The estimated cost of spinning and weaving a pound of cotton is 3 cents, making two yards to the pound, equal to 18 cents per pound, at 9 cents per yard, for osnaburgs. The crop, then, when spun and wove, is worth 18 cents per pound, making \$180,000,000, (allowing 10 per cent. for waste,) instead of \$55,000,000, the yield *now*, when sold as *raw cotton*.

The inequality between the labour and capital for growing, and that for spinning, is startling. A pound of cotton, ploughed, hoed, picked, ginned, baled, spun, and wove, is worth 18 cents. The spinning and weaving, it is said, can be afforded for three cents cost, which would leave 15 cents per pound for the labour of the planter, supposing the cotton mill in the cotton field, and the mill to get cost only. But as three cents may be too low an estimate, make it 6, and then 12 cents is left for the planter. But now what does he get? 4, 5, and 6. The question may now be asked, Who gets the balance? Allowing 6 cents to the grower, and 6 cents to the spinner, there will be 6 cents yet unaccounted for. It goes to pay warehouse charges, freight, insurance, drayages, storages, weighages, *pickages*, pressage, commissions, postage, bills of lading, exchange, freight to Liverpool, dock dues, freight on railroad to Manchester, and then it is at the mill, and the same process brings it back; and this will fully account for the 6 cents per pound. Who pays these charges? The grower.

The growth and production of cotton are accomplished by the muscles of men and mules, labouring incessantly eleven months in every twelve; exposed to heat, to cold, to winds and rain, and to the malaria of swamps.

The spinning and weaving are done by the iron muscles of the spindle and

loom, driven by the never-tiring engine, waited upon by boys and girls; and this labour is under roof, certain as to *quantity*, free from overflow, from frost, from caterpillar and boll worm. This simple statement is evidence clear and strong, that it is the grower's labour which is now sacrificed, and greatly sacrificed. A firm and determined resolution among the planters—for they are the men who are suffering, and they must act for themselves—can arrest this policy in a few years. An export duty on “raw cotton” would ensure it, but it may be accomplished without it.

Having determined that the mills must come to the *cotton*, which is but one move, while sending the cotton to the mills is a heavy annual, perpetual tax, it is proper to inquire if cotton growers can get up the spindles and looms among the fields.

The following facts answer the question in the affirmative, most distinctly. We estimate the crop at 2,300,000 bales. The factories now in the United States require of this 600,000 bales—leaving 1,700,000 for the South to spin. This would require 350 mills, with 10,000 spindles each, or 700 mills with 5,000 spindles, or 3,100,000 spindles.

COST OF SPINDLES.

3,500,000 spindles, with all machinery necessary,	
looms, &c., at \$12 each,	\$42,000,000
700 engines and fixtures, at \$8000,	5,600,000
Other expenses in and about the machinery,	5,000,000
	\$52,600,000

The machinery, if all purchased in one year, would cost about \$50,000,000. This is the only debt of importance necessary to be made, and its payment can be extended into ten instalments of \$5,000,000 each, interest added. The difference in the income of the cotton growers, when they become spinners, is so great that this debt would never be felt. The 1,700,000 bales intended for the cotton field spindles, now yields an income of \$40,000,000, at 6 cents. The same cotton spun up, by the creation of the above debt for these iron muscles, will give the same growers an income of \$120,000,000, less the cost of spinning and weaving, which would give an increase of net gain per annum, nearly equal to the cost of the machinery.

One mode here suggested is, for planters, provision growers, and mechanics of all the cotton States, to send in petitions for Manufacturing Companies to be chartered, upon application to the legislatures of their respective States; and also to pass an act for a general charter for all persons who may associate together for manufacturing purposes, so as to avoid partnerships, and limit the liability of stockholders to the loss of their subscriptions as stock.

Spinning may be commenced, with any number of spindles, with or without looms. There is an extensive demand for cotton yarns, and thread is a saleable manufacture. The mills at Lowell average about 6000 spindles for each building. There is one, however, at Salem, containing 30,000 spindles, the largest in the world under one roof. The size of buildings, then, will depend upon the quantity of machinery intended to be worked. A mill for 2500, or 3000 spindles, for coarse goods, will require, perhaps, three rooms, 25 by 60 feet long, and a plan, suitable for the *cotton field system*, (which will be in the country, and where land costs nothing, and manageable by slave labour, at comparatively *no cost*,) is for fifteen planters to take \$4000 each in stock, select a site for the mill near their plantations, detail three men from each, making a building force of forty-five men, besides an overseer and a general manager, one of the stockholders; with

this force, and as many teams as may be necessary, they will proceed to put up three rooms of 25 by 60 feet, of wood, one story high, of coarse, strong, undressed lumber, such as they can readily prepare from the forest, without an outlay of capital. Add at convenient distances 15 or 20 cabins, and the buildings for the mill are up. This wooden, one-story plan for the cotton field possesses the advantages of costing nothing, of fixing and running the whole machinery upon the ground, making it more steady and accessible, and avoiding wear and tear, with better ventilation, less noise, and, perhaps, less risk from fire, because it is not the walls of a mill, but the cotton about the machinery which is subject to burn.

One-story rooms, running in different directions from the engine, of wood, and without much labour in its preparation, are offered as a substitute for the four story brick and granite palaces of England and of New England, which are required to be built with thick walls, to avoid motion in the machinery, and therefore expensive, costing from \$30,000 to \$50,000; and when buildings for the operatives are finished, the bills are often \$100,000 in a site and buildings, before a wheel is turned. While the manager and overseer are putting up the wooden mill and cabins, the planters, acting under the charter, have issued their bonds for \$40,000, bearing 7 or 8 per cent. interest, payable in three, four, and five years, in equal instalments, and secured the payment by mortgage on the site and machinery, and a half section of land each, have sold the bonds and bought the spindles and engine, and are ready for operation in six months from the formation of the company. A man and four boys or girls are taken from the plantation of each stockholder and put in the mill, each getting credit according to the number furnished. These, with eight or ten trained hands as instructors, furnish a mill force which will spin and weave 1500 bales of cotton; making a million of yards of osnaburgs, worth 9 cents per yard, equal to \$90,000 gross sales. The stockholders, being planters and near the mill, furnish provisions, cotton, and wood for the engine.

Suppose the planters who have put up this mill make 1500 bales only of cotton, which at \$24 are \$36,000. Since the erection of the mill the same cotton is worth \$90,000 per annum. At the end of three years they commence paying the debt for machinery by instalments, and before this, the hands are trained to their new employment, and the planting account is raised from 6 to 10 cents a pound for the *field labour*, which had been heretofore shipped off, and lost. The mortgage debt is \$2666 each, being fifteen planters associated to be paid in three instalments of \$888, with interest, and that, when they are getting for their field labour 10 cents per pound. What, then, would be a debt of \$1000 a year, on substantial planters, when they have ensured 10 cents a pound for their crops by incurring the debt?

There are nine cotton States, including Tennessee, which will average about sixty counties to the State. Two mills in every county, of 3000 spindles each, are sufficient to spin the whole crop, and render the South magnificently rich, and gloriously independent. I mention these facts to show the immediate capability of the cotton growers to relieve themselves from this blighting system of shipping off the soil in *raw cotton*, and bringing home nothing in return, comparatively speaking. There are twenty counties in Tennessee, South Carolina, Georgia, Alabama, Mississippi, and Louisiana, and a less number in Florida, Arkansas, and Texas, which can spare the force to erect the buildings and cabins, for ten such mills, in any one year, and make the usual cotton crop besides.

Steam is a regular, portable power, free from freshets, droughts, and millponds, and can be commanded at will for three hundred days in the year, in any desired quantity, suited to small or large operations. Two sections of

land affording twenty cords of wood per acre, which is a low estimate, will drive an engine for 3000 spindles for eighteen years. This also shows that there is a permanent source of power in the cotton States, even when nature has not furnished either suitable streams, or deposited in the earth beds of coal; in some sections, however, both are found. The difference between the cost of water and steam is but one item, and that not large; but the only difference now is that of wood and coal; steam power is now considered as cheap as water, all advantages estimated. Among the fields a site may be often selected, near enough to enable stockholders to haul the seed cotton directly to the mill, the most desirable condition for the mill work. Thus saving the labour of ginning and baling, the loss on bagging and rope, commissions for buying cotton, and freight, besides saving the work of the picker at the mill.

Cotton growers who own slaves have long known that they are capable of making efficient operatives; and when once learned, they are fixed, permanent, and valuable. This branch of the business furnishes profitable employment on cotton to a portion of the field force, which relieves the soil to that extent, which is now wasting away, from over fatigue. It gives scope to all the mechanical talent among the slaves, both males and females. Men in the machine shops, and women among the mules, throstles, and looms. The condition of the States now is dependent; that is not the true position of the chivalrous South. A war with Great Britain would prostrate them at one blow. The revolution in France was like an electric shock, though she had but a few cotton mills. The starvation of Ireland, that bright isle of the ocean, puts *down cotton*. The Bank of England even can and does press down the price of "*raw cotton*" at Liverpool; and its recoil falls back on the grower. This dependency is unmanly, and does not belong to the American character. The angry ebullition of emancipation sympathy for the happy slaves of the sunny South, among our own Northern and Eastern friends, is sometimes a source of a moment's uneasiness, in consequence of our dependent condition and the repeated sacrifice of our field labour. These dependencies should be forthwith severed, by a determination to put up the cotton mills among the cotton fields, and spin and weave by slave labour.

This is the certain, safe, and sure remedy for all the *evils* enumerated above; bringing bright prosperity, humanity, with enlarged sympathies, and an ameliorated condition of the great working force of the South, in its train. Their labour, thus skilfully directed, would increase rapidly the net income of the growers, and slaves take the condition of their owners. Give them large incomes, and you make the negroes rich. As a general rule, (some exceptions, I regret to say,) rich owners have rich slaves.

The true character of the black man in servitude is not understood, except in the South. Negro society, with its amusements and sources of enjoyment, is not organized anywhere else to the same extent. They are born in servitude, and so were their fathers and grandfathers, and a long line of ancestry, and they have never known any other condition, and but few ever desire to change it. The body is accustomed to daily labour, inured to it from early youth, and it is a habit of his life. The mind is not called into action; they are relieved from all the responsibilities, sufferings, and mental anxiety of freemen, amenable to the laws of the land and the rules of society.

Out of the general fund, they are fed, clothed, and housed; and medical aid and attention and care are furnished when sick. Among them there are no widows or orphans thrown upon the charity of others; no paupers, and no lunatics; no painful anxiety for the future welfare of their wives and children, for a home and a competency are left for them when the husband is dead and gone.

It is the duty of their owners to bring to the aid of this available and efficient corps of regular labourers in the field, the steam-engine, and the iron muscle of the spindle and loom: with these implements they can put the labour of the field into a consumable shape, which leaves the world open as a market.

No longer will they pile up the cotton bales around the English mill agent in Liverpool, and suffer it to be sacrificed because they have no remedy. There will be a demand for coarse, heavy, cheap cotton goods, as long as there are labourers in the world to wear them, and in this shape the great bulk of the cotton crops will be consumed. Europe can continue to make the fine goods in which the raw material is no part of the cost; one pound making twenty yards of fine muslins.

South America, Asia, Africa, and the East and West Indies grow about 470,000 bales of fine cotton, well suited for fine fabrics. This supply Europe could still convert into fine fabrics. New England to make prints, and all other three to five-yards goods, and the cotton fields in the sunny South, in a warm climate, can work up the bulk of the crop into coarse, heavy goods, which will average not exceeding two yards to the pound. This system put into operation would yield to the Southern States for cotton alone \$150,000,000, and supply the spindles now up in the United States. What effect such an income, in imports or money, would produce upon the trade and commerce of our southern cities, is suggested for reflection only at present.

Large bodies move slowly; and to ensure this result I suggest an export duty of \$5 per bale on "raw cotton." Corporate companies by growers, and all others. The cheapest buildings which will answer the purpose. Buy the machinery, and mortgage whatever may be necessary to raise the funds by sale of bonds, at par. Spin and weave by a part of the field-force. Do this, and the fortunes of cotton growers are fixed on a permanent foundation, promising accumulated wealth to the whole South.

The iron establishments in the United States, and the machine shops generally, may look to the South as an extensive customer in a few years. It is, no doubt, the true policy of the South now to order the machinery mentioned, worth \$50,000,000. This must go to the iron establishments, and the profits might be taken in stock in some of the best mills, and thus lessen the outstanding liability for machinery.

The mild, warm winters in the South are favourable to cotton spinning in cheap buildings. The passage of the Export Duty Law would turn the eyes of all spinners and weavers in Europe upon the South, and the country would be benefited for a while, by employing them until the raw force is trained. These suggestions are made for the study and consideration of cotton growers, by

A PLANTER.

Important Invention.—On last market-day, Mr. Yates, an extensive corn-factor, presented W. F. Wratishaw, of Rugby, with a can of milk capable of being kept in a good and fresh state for an indefinite length of time, by means of a chemical process which it undergoes on being taken from the cow. It was manufactured at Toxall, near Stafford, on the estate of Earl Talbot, and we are informed that the milk of 700 cows is daily acted upon by this novel invention, which must, in course of time, be a valuable acquisition in the victualling department of the navy, for which it is well adapted. The process has been patented; and not only may a rich sweet milk be constantly had, but also rich cream convertible into butter in a very short time.—*English paper.*

IRISH PEAT CHARCOAL AND THE SANITARY REFORM OF LARGE CITIES.

THE following is the account of the second meeting, from the proceedings of which we took an extract for our December number. Even medical men will see how natural is the connection between agriculture and some things that might seem to fall more exclusively within their department.

Last Monday evening a second meeting on this most important subject was held at the Mechanics' Institute, Southampton-buildings, Chancery-lane. The present much exceeded the former attendance: above eight hundred persons were present. The members of the different scientific bodies mustered strongly; medical men in abundance, who seemed to take great interest in the proposition; poor-law guardians, evidently on the "*qui vive*" as to what could be best *made* of the paupers; engineers "*ad infinitum*;" and though last, *not least*, a considerable attendance of agriculturists and florists. But we have not done: here and there appeared in a quiet corner, or under the shade of a lamp, a "*bonnet*" *with a veil*, closely drawn over it, but which could not conceal the interest *within*, on a subject which, perhaps, after all, more immediately affects the *woman* than the *man*. *She* feels and suffers under the *evils of home*. *He* spends his day abroad, from place to place, and therefore escapes. In fact, this meeting was composed of those who appeared, one and all, to feel that a question of paramount interest was to be discussed, and therefore assembled to have it fairly done.

After 8 o'clock, the time named, some impatience was expressed by the assembly, when Mr. JASPER ROGERS presented himself, and addressed the meeting as follows:—In praying attention to what I am now about to place before you, I do so with great diffidence. I feel that to an assembly composed of so many men of science, I can scarcely hope to bring forth aught that may be considered really new; but the fact that so many have done me the honour of being present to hear what I have most humbly to promulgate, gives me hope that, although there is "really nothing new under the sun," I shall have the gratification of offering for the use of my fellow-beings the application of old principles to new purposes; and I shall hope to show that the combination of two substances—both deemed to be the meanest of nature's productions—will give effects, to prove, if proof be wanted, that nothing which nature produces is mean, if used for its purpose. The excretory matter of England and the bogs of Ireland have each been deemed pestilent and worse than useless; but, in reality, both are essentials to the luxuriance of vegetation. What does the mere observance of nature teach us? This—that plants luxuriate abundantly in nature's wilds. Why? Autumn blasts the flower, then the fruit, and then the leaf, which fall and rest, mayhap, in near proximity to the root that gave them birth. The flower withers, the fruit and leaf decay, earth goes back to earth again, and new plants rise, to worship nature. Such is nature's most beautiful operation. What is man's? Man takes to himself all the products of the earth. He consumes all, it may be said, that the earth yields. The inferior animal eats and draws from the soil elements which are essential to be returned, in part at least, to give the food again; but man consumes the animal! The plant draws from the earth its nutriment, and man consumes the plant. He luxuriates in all that animal and vegetable life can produce; and then, ungrateful as he is, forgetful now and always of the source from whence he draws his sustenance—takes all, and gives back naught. (Hear, hear.) I

am wrong; I said man, but it is only the Englishman! The Chinaman, whom in our self-complacency we despise, does not forget his obligation to the earth. All goes back again, and vegetation flourishes luxuriantly. Our neighbours of the Continent repay their debt to nature, and therefore inundate our markets with their grain.* We alone, the mightiest of the earth, forget the earth, yet periodically call on Providence to succour us. We pray for food, while the means to secure it abundantly is left to rot and fester till it kills, not feeds us. (Hear.) Who can doubt that the horrors of cholera have been increased and nurtured by our sewers? Through them all that should be given to the earth is rendered to the waters, and our rivers are thus made cesspools. (Hear.) I fear to theorize on so fearful a subject; but may we not with advantage inquire, is cholera an atmospheric influence, bred and wafted to us from some vast space of decaying vegetable matter, yielding continuously an atmosphere of life—imperceptible to the eye—but which feeds and fattens among the haunts of men, upon the results of man's own slothfulness? Is it the offspring of humus?—an animalcule, perhaps, which wends its way over the filth of India, where millions of beings unceasingly give out to the atmosphere what never should be left exposed to it. Luxuriating on its horrid food, it reaches mighty England at last, to prove to her she is filthy midst her magnificence—weak and powerless midst her greatness. (Hear, hear.) But I need not theorize. It is generally admitted that cholera is propagated by the effluvium from decomposing matter in the sewers of cities; and the question is, how can that monster evil be checked? I believe it can, by simply following the laws of nature—rendering back continuously to the land the elements drawn from it, which are the food of plants, but destructive to mankind. But it will be asked, how can this be done in such a place as London, where millions are congregated together? How can the matter be removed without contaminating the atmosphere of the town, and how used without that contamination being extended to the country? My answer is, *it can be done by intermixing it with peat charcoal!* At the last meeting here I had the satisfaction of proving that the intermixture of peat charcoal and excretæ perfectly deodorized the fætid matter, and rendered it apparently dry and fit for transport by any conveyance. Now, although that has been accomplished to the full satisfaction, I believe, of all present, it is only right that the properties of peat charcoal should be fully understood. It is the groundwork of all the plans I shall have the honour of describing; it should, therefore be perfectly clear that the peat charcoal deodorizer is a fertilizer also, which many other deodorizers are not. I must, therefore, pray your kind indulgence in permitting me to dwell a little on the facts relating to this very singular production. Early in the year 1845 I first brought the question of the value of peat charcoal as a fertilizer of the soil under public consideration, in a report then published, which had been previously made by me to the Relief Commissioners of Ireland, on the subject of the bog lands of that country; and let me premise that what I speak of is *peat charcoal*, not *peat ash*, which has long been known and used, and is totally different from charcoal. My investigation of the question was induced by experiments which had been made at the Botanical Gardens at Munich, in 1844, by wood charcoal applied there to aloes, pelargoniums, &c. Seeing the effect produced by wood charcoal, it immediately occurred to me that if peat charcoal possessed a fertilizing power, a mine of wealth (to use an Irishism) lay upon the surface of the country. I tried my experiments, and one and all were successful. The fact, however, was then not only doubted, but

* As in Belgium, where they protect their own industry.—*Ed. P. L. & A.*

actually laughed at by many, and I had the honour of being refused the gold medal offered by a public body in Ireland, for an essay on the treatment of the potato disease, (although offered a silver one, which I declined,) because, as I have been informed, I had set forth that carbon given to the roots of plants would invigorate them. This was then deemed a fallacy, but I am happy to say, any one may now allege the same without being laughed at. At that period, a popular chemist had set it down "that all plants depended upon the atmosphere for the carbon they contained," but the leading chemical writer of the present day says very differently. Brande states, in 6th edition, published 1848, that "although the accumulation of decaying matter which chemists term *humus* performs an important part in vegetable nutrition, it is not by its direct absorption and assimilation, but by its influence as a source of carbonic acid, which is partly taken up by the juices of the root, and partly evolved into the atmosphere; so that plants, independent of their leaves, can thus receive carbonic acid." Thus Brande proves what I then promulgated, namely, that peat charcoal acted upon by the soil and atmosphere yields carbonic acid to the plant, *for peat charcoal performs the same part exactly as humus*. I then stated what I do now, that the fertilizing power of peat charcoal can scarcely be over-estimated. It acts upon all that the soil produces: *I except nothing*: and, to use the words of Dr. Lindley in reply to a correspondent, (although the learned doctor was at first a doubter,) "*Use it for your onions, but it is good for every thing*." (Hear, hear.) My own experiments have proved its value beyond a question; but I shall give you a few particulars of those made by two gentlemen of large landed property in Ireland, who, immediately after my first publication on the subject, entered into correspondence with me, and closely followed out my proposition—Henry Newton, Esq., Mount Leaster, county Carlow, and James Russell, Esq., Dunlively House, county Donegal—and I beg to say that both were strangers to me until my publications came before them. Mr. Russell commenced his experiments in 1846. He tried it with all the usual farm produce except wheat, with uniform success, and as a top-dressing for grass land he had fully borne out all I had stated in that respect; but his trial on a field of four acres with potatoes in 1847 was very remarkable. They were planted in ridges, or, as termed here, "lazy beds;" one-half the field manured with farm-yard manure, the other with peat charcoal only, about a handful thrown on each seed. The result was more than a double crop from the charcoal; and he informed me that he was himself so astonished at the fact, that he requested Lord Donegal to see and vouch it. At my suggestion he planted oats the next year on the whole field without any further manure, and he assured me that the increase on that portion manured with charcoal was nearly in the same ratio as the potatoes. Now, what is the cause? Simply this. The charcoal lay on the land throughout the winter. Every shower of rain that came brought it ammonia and common salt in abundance. This continued for the winter months, and when spring came every grain was rich in nutriment, while it held moisture besides, to give it to the seed at once, and stimulate it into growth. Mr. Newton was most anxious to tell you these facts himself, but he arrived in London too late for our last meeting. He brought potatoes, of which I will tell you the history. In February last he planted a large field in drills, manured as usual, not then having charcoal; but in April he got some, and, before the potatoes being earthed, he top-dressed a few yards at the foot of all the drills as far as he had charcoal. He authorizes me to state that the result was not only very nearly a double crop, but that there was not a taint in one of them, while all the rest of the field was more or less diseased. (Hear, hear.) I regret extremely that he was unable to wait

for the present meeting; but he also authorizes me to say he has now a crop of Swede turnips that cannot be exceeded, to use his own expression. Yet they were not sown till June. No rain came for a month after; all the crops in his neighbourhood failed, and his were only manured with peat charcoal. In short, he has fully proved its value for all plants; like me, he excepts nothing. But I must tell you his reply to my inquiry as to his experience of its value for grass land. He said, "Nothing can exceed it; and there is little or no labour in using it. My friend Fenwick swears by it, and he declares he will write his name on the best grass in the country with *black* charcoal, and it will be the *greenest* part of the field in ten days." (Hear, hear, and laughter.) Having fully satisfied myself of the value of peat charcoal *as a manure* individually, my next question was, does it contain the property of correcting putrescence, which chemists have long known to exist in animal charcoal? I was aware from experiments I had made several years since in the purification of water in large quantities for manufacturing purposes, that many descriptions of wood charcoal—for instance, all hard woods—did not possess that property at all; but I was at length happy in the discovery of proofs that peat charcoal specially prepared was gifted with it to the highest degree; but it is right I should say all peat charcoal has not the same effect; and this I wish to be perfectly understood. The quality and preparation greatly affect the results. From the moment, however, of my first discovery, I was impressed with the idea that if it were possible to make the pestilential bogs of Ireland (as they have been called) yield a material to neutralize the really pestilential sewers of London, such an amalgamation would not only by the union produce wealth to both countries, but that that union would also produce, through self-interest alone, the real and lasting union which Providence must have intended, and which would be the greatest blessing that ever fell upon both. (Loud cheers.) In this happy anticipation I have incessantly laboured for nearly five years, midst derision at the commencement, doubts and difficulties of all kinds midway, jealousies and attempts to overthrow my hopes and my proposition at the end. But I stand now, for the second time, before an assembly openly convened to test the reality of what I have promulgated. And I believe in my heart, that if England takes from the bogs of Ireland the means to give purity to the towns of England, Ireland will be blessed with food and contentment, and England with increased wealth and happiness. (Cheers.) At our last meeting I proved to you that the amalgamation of peat charcoal and excretiæ produces an inoffensive mass, capable of being packed in bags, and transported by any conveyance. I would now pray attention to what that compound contains. I do not hesitate to say it is richer in fertilizing powers than any other manure that can be produced. The components of peat charcoal are carbon, hydrogen, nitrogen, oxygen, sand and clay, oxide of iron, phosphoric acid, silicate of potash, chloride of sodium, carbonate of lime, sulphate of lime, &c., possessing, as a whole, the power of absorbing, deodorizing, and retaining for the uses of vegetation, the components of human excretiæ, &c., phosphate of ammonia, phosphate of lime, phosphate of magnesia, phosphate of soda, phosphate of iron, chloride of sodium and alkaline sulphate, sulphate of lime, sulphate of soda, sulphate of potassa, hydrochlorate of ammonia, lactate of ammonia, free lactic acid, urea, uric acid, animal matter, mucus, earthy phosphates, &c. Is it possible to conceive any thing richer in the essentials for vegetation? In fact, it may be said there is nothing wanting. And recollect, that while it originally contains all you have heard, peat charcoal has, as before stated, the extraordinary power of drawing to it, so long as it rests in the land, all the ammonia, salts, &c., which every shower of rain brings down, still en-

riching itself more and more; and, according as it gives out its elements of nutrition to the plant, it becomes the vehicle to receive a new supply from the atmosphere. It is, in fact, at all times a reservoir of both manure and moisture combined. It will take up above 80 per cent. of water, and above 90 volumes of those volatile gases which are the food of plants. The intermixture may be well called artificial humus. But I believe we are all ignorant of what the real and manifold properties of peat charcoal are. Peat, in its natural state, is known to possess the extraordinary power of preventing the decomposition of animal substances. Human bodies have been found undecomposed which have been submerged for years. It contains spermaceti—whether naturally, or by deposit of animal matter, produced from itself by insect life, and given back to it in death, or otherwise, is unessential for the present. But, above all, it holds an abundance of humine or ulmine, which, it is well known, is essential to vegetation, and possesses extraordinary powers in attracting or fixing ammonia. None of these properties exist in wood, except a slight portion of humine in elm. In the original properties, perhaps, rest the singular virtues of peat charcoal; for I do not hesitate to state that its powers are for many purposes infinitely beyond all other charcoals, and only belong to itself. We have been in the habit of assuming that all charcoals contained identical components, but I believe this is an error; in fact, I have so proved, and the proof is within the reach of all. Charcoal of *lignum vitæ*, teak, and other hard woods, has no deodorizing power, neither has the charcoal of coals; and it has long been known that the charcoal of hard woods has no decolorizing property: hence why animal charcoal has been used for such purposes. Still, it has been assumed that charcoal, in a general sense, had not only these properties, but that it has been known to be a general deodorizer. I shall only say, that if any one knew that peat charcoal had the property of deodorizing nightsoil in the manner that I have brought forward and proved, he has, I conceive, a great deal to answer for, in not having brought it before the public. Peat charcoal, it cannot be doubted, possesses properties belonging to itself alone, and perhaps there are few subjects so well worthy of the deep research of chemistry. If I but succeed in enlisting the attention of the many men of science present, I shall be happy to be only the humble *finger-post* to the path. (Cheers.) But what does peat charcoal present besides, for public good? Its extraordinary capability of absorbing sulphuretted hydrogen and other gases inimical to animal existence, gives it the power of relieving us from the fearful evil that the inhabitants of cities now suffer. By its use, excretory matter may be constantly kept from the sewers, in place of being daily disseminated through miles of streets, giving out those gases which were formerly held sealed up in cesspools. The evil produced may be a thousandfold beyond that which cesspools formerly permitted, because for every square foot of surface exposed to atmospheric influence in a cesspool, the distribution thereof, by means of a stream in a sewer, say one inch in depth, will give the contents of 12 cubic feet to be acted upon; thus 1728 inches of surface will generate gases destructive of human life, in place of 144. Do not think I advocate cesspools; far from it, for they are a disgrace to civilization; but I hesitate not a moment to say, they breed disease in a manifold degree less than sewers. No city can be healthy so long as the present system of sewers continues. The proof is simple—in London itself 140 of its people die for every 100 that die in the surrounding counties. I shall now beg leave to point out the plans I suggest for the sanitary reform of London, which are similar to what I submitted to the sanitary commission two years since, and which are now before the metropolitan commissioners of sewers. I do not present them as fully matured, but as the

principle upon which I am satisfied the whole excretory matters of towns may be saved, and converted into a most profitable manure. Modifications will possibly suggest themselves hereafter, but the principle has been already proved.

Mr. Rogers then developed his plan for the sanitary reform of large cities, which he illustrated by reference to numerous diagrams. In the first place, he proposed the construction for every house of a tank about 2 feet 6 inches square, and capable of holding 18 or 19 cwt. of matter. By this arrangement, supposing it to be universally carried out in London, only 248 wagons and double that number of men and horses would be required periodically to remove the tanks and replace them again. In fact the same staff which now carried away the ashes from dwelling-houses might remove the contents of the tanks: and the adoption of this plan would give a return to every house £5 or £10 a year. It had been asked, however, if one tank might not be constructed for the reception of the excretory matter from a number of houses; and it might. Let a chamber be made under the street, 30 feet by 20, with two tanks 28 feet by 6 feet, and they would be amply sufficient for receiving all the matter from 500 houses in 24 hours, and also to contain enough peat charcoal at the bottom to allow of the filtration of the liquid, and the retention of the solid matter. Workmen employed 12 hours every day might get rid of all the matter deposited in 24 hours; and, in doing so, not the least odour could, under any circumstances, arise. In his estimate he had allowed from £10 to £15 a house for accomplishing this; but such tanks as the latter would cost, say £500; and the only additional charge would be the earthenware pipes, of comparatively little expense. In that way £5 per house would be more than ample. And if he was not wrong in what he had that night shown, every house would net £5 to £10 per annum—if what he proposed was honestly carried out. The disagreeable and noxious effluvia which were generated at cab-stands and other places in the streets of London might also be completely destroyed. And with regard to intramural interments, if the management of any churchyard in the metropolis were intrusted to him, he would undertake that in the course of one day after carrying into effect the plan he proposed, no odour whatever should arise from it. Upon the surface of the ground he would place some three or four inches of granulated prepared charcoal, which would arrest the gases and prevent them from passing through; and this he would cover with a small quantity of macadamized stones. (Hear, hear.) Any person had the power in his own hands of testing for himself that peat charcoal would absorb all gases that arose from decomposing matter; but there was another purpose for which it was also highly valuable, viz. the filtration of water. They had only to cause the water which they desired to purify to pass up—not down—through a layer of charcoal, and then through a sponge, and it would flow out as pure as spring water. (Cheers.)

Sir Charles Aldis, Dr. Grosse, and Mr. Cuthill (florist) of Camberwell, having been appointed judges, experiments were proceeded with to show the deodorizing properties of peat charcoal. The machine was put in motion by manual power, and in an incredibly short space of time a quantity of excretory matter, mixed with charcoal, had passed through it in the form of a dry black powder, the volatile gases which it originally possessed being entirely neutralized, and the substance itself rendered completely odourless.

Sir CHARLES ALDIS then reported that the judges were of opinion that the experiments had been fairly and properly made, and that they were most successful. (Cheers.)

Mr. CUTHILL said he had carefully examined the machine before the

experiments were made, for the purpose of ascertaining that they were conducted fairly; and he must say that he considered it a most marvellous discovery. (Hear, hear.)

Doctor GROSSE said he could not say too much for what he had witnessed; and that he did not doubt that, because England was first in all other things, she would soon be first in agriculture. (Cheers.)

Mr. BLANCH, (surgeon,) after expressing his approbation of the experiments, and his concurrence in the statements made by Mr. Rogers respecting the value of peat charcoal as a deodorizer, said that the only drawback he saw in that gentleman's plan was that the sewers would carry away the liquid excretia. Thus a considerable portion of the existing evil would remain, though it was possible to preserve the liquid as well as the solid manure.

The CHAIRMAN then read a resolution to be proposed by the judges.

Mr. SWINBURN stated that, before any resolution was put, he wished to point out that he had an antagonistic plan. He considered that the *two excrements* should be separated and kept asunder, for which Mr. Rogers's plan did not provide. (Laughter.) But, as he could not deny the deodorizing property of charcoal, he could not object to the resolution which it was proposed to put.

Sir CHARLES ADDIS said he had great pleasure in proposing the resolution he held in his hand, by desire of his fellow-judges. Mr. Rogers deserved the highest praise. The sentiments he had expressed did him honour, for they could not be doubted. He had conferred a great good on Society. What could be more simple than his plans? and at all events, if the authorities would not remove the cesspools, surely they ought to *smother them with charcoal*. He could not express too strongly his approbation. (Hear, hear.)

The resolution was as follows:—

"We, the undersigned, having been appointed by the meeting held here this evening to watch the experiments made by Mr. Jasper W. Rogers, explanatory of his views for carrying out his plan for the Sanitary Reform of London and other large cities, by the application of Peat Charcoal, do certify as follows:—

"That the experiments have been fairly and openly performed, and that the results have justified the predictions and sustained the facts advanced by Mr. Rogers in his Lecture.

(Signed by)

"Sir CHARLES ALDIS, Surgeon, Old Burlington-street, St. James's.
JAMES CUTHILL, Florist, Camberwell.

Dr. THEODORE GROSSE, Stoke Newington."

The CHAIRMAN then rose. It became his duty to read a resolution which had been placed in his hand, in order to *ascertain if it were the feeling of the meeting*. He then read the resolution, and, said—"All who are of opinion that this resolution shall pass, will express that opinion in the usual way." A forest of hands immediately appeared, while no dissenting hand was presented. The following resolution was unanimously passed, with enthusiastic cheers:—

"Resolved unanimously,—That the cordial thanks of this meeting be given to Mr. Jasper W. Rogers, for his instructive and important lecture on the plan as proposed by him, for the sanitary reform of London and other large cities, by the aid of peat charcoal; and that we deem his proposition worthy of the very serious attention of the inhabitants of this great city, as a lucrative method of freeing themselves from the serious evils under which they have been and still are suffering, in consequence of the present defective system of sewage.

"WM. SHAW, Chairman."

Mr. ROGERS came forward, and was loudly cheered. He said he could not express the obligation he felt: all that he would say more on that point, was, that he would rest neither day nor night until he had carried out those

plans which he was satisfied would be of the utmost consequence to the country at large. They would save the poor of Ireland from starvation, and the poor of England from death. Ireland had 3,000,000 acres of bogs, and thousands of poor people ready to give their labour to produce peat charcoal, which might be sold at £2, 10s. a ton in England; yielding large profits to those who embarked capital in the manufacture. The peat was from 10 to 50 feet deep, and he could answer for it, that if London took even 2,000,000 tons a year, there would be enough for the next 6000 years. (Hear, hear, and laughter.) And what would it do for themselves? Get rid of the horrors they were suffering under, and at the same time give the farmer plentiful crops, at a comparatively trifling cost. (Hear, hear.) He wished the meeting saw what he witnessed yesterday. At the request of the Irish Amelioration Society he visited Windsor, in the hope of purifying the miserable square of buildings where some 17 or 18 persons had died, within a few days, of cholera. Before his arrival (accompanied by Mr. Shoredicke, one of the Directors,) government officers had taken the matter in hand; the Society was, therefore, unable to accomplish its desire. He never saw so fearful a place. A little square of 21 houses, situate at the lowest part of the town, had the sewers from all the houses on the hill above running directly under them, in addition to all their own filth, and at the back ran an open ditch filled with house matter. This ditch communicated with several others, some five or six thousand yards in length, at each side of a public road, and into it had been emptied for years all the filth of the town. Now, all these horrors lay within 500 yards, as the crow flies, of where the Royal standard of England was then floating, and where her Majesty then was. (Hear, hear.) Unscared she had come there—to her honour be it spoken—but was it not fearful to think that within the very precincts of royalty so dangerous and abominable a nuisance existed? (Cheers.)

Thanks were then voted to the chairman, who warmly expressed the pleasure he felt at having been instrumental in proving what he had himself doubted; but which, if proved, he felt would be a great benefit to agriculture.

The meeting then formally closed, and several left the theatre.

Mr. ROGERS, in a few minutes after, came forward and expressed a wish that the meeting would remain until he showed them the intermixture of *equal parts of charcoal and excreta*. Those quantities were then weighed and passed through the mill, and immediately came out perfectly free from odour. In an instant a rush was made for the *precious "morceaux;"* every hand was in the tub, and the whole vanished at once. While passing out, we heard the man who worked the machine saying to Mr. Rogers, "*If you let me put another charge in, I'll get a shilling an ounce for it.*" In sober seriousness, not a grain was left.

Sex of Poultry.—A correspondent gives some interesting facts upon the success of cockfighters in breeding none but males, which I should like to see elucidated. Books are at variance, and agree only where they are copied from one another, seldom giving the result of the writer's own experience. "V. S." appeals to your correspondent "D. S. E." who pointed out in a former volume of your paper the mode adopted to choose those eggs containing male and those with female embryos. More recently, in the "Ornamental Poultry," the latest work published, with the exception of the "Farmers' Dictionary" just completed, and which I have not seen, the author states his decided opinion that there is no possibility of foretelling the sex, but which is certainly opposed to the instances afforded by "V. S." —*English Paper.*

THE PEAT OF MASSACHUSETTS.

ITS CHARACTER AND USES.

Mount Monotiquot, Braintree, Nov. 20th, 1849.

J. S. SKINNER, ESQ. *My dear Sir,*—It gave me pleasure to hear from you once more. I can easily conceive how your time must be occupied, and the labour—*hard* labour, performed by you to get ready for the press monthly, such a work as yours. Your inquiry about Peat Charcoal I have attended to; we have some ponds when dry, from which is taken a black mud, which I consider of little value. We have some swamps, (I have one of about six acres of probably twenty feet in depth,) made rich in decomposed vegetable matter, partly by leaves from an adjoining forest, partly from new sterile plough lands, and partly from its own accumulation, from the creation of the world to the time of aquatic plants, trees, &c., which have in their time grown, fallen, and decayed, and are now, except some top strata of roots, in a state of decomposition, the vestige of large trees, to be thrown up by the spade. This material, when thrown on the uplands and frozen dry, can be divided in its yearly deposits as with the leaves of a decayed book. This is sometimes cut into square pieces of about three inches by twelve long, and dried, housed, and used as a fuel, and is sometimes worked over like mortar, and then formed as described; but I have never known any charred, and my Irishmen, of which I have a delegation of ten, are ignorant of any practice other than ours; but you will find a short account in the Journal of the Royal Agricultural Society, vol. 5, p. 507, of Charring Peat, and rather a flattering account of its fertilizing properties. Dr. Lindley alludes to something of the kind, but I do not understand him; he calls it charring, I believe, but it is done by putting the peat in a liquid manure tank, and saturating it. Ruffin speaks of its acid qualities, which through an experience I can confirm. I throw this out, and team it a short distance to hard land, and allow it time to drain and freeze, and when my yards are cleaned in the spring, I cover them about sixteen inches deep with this muck, and during the year I turn it all over in compost, which, I believe, answers well. I have had one man composting these three weeks past, with muck, sawdust, and coal cinders from railroad engines, with two hundred dead dogs, which the city inflicted capital punishment on, dead cows, horses, hog manure, &c., together with an occasional saturation of human urine, which I team from the city, a load of six hundred gallons at a time. This will be in fine condition in May next, and as I want something to mix with the strong manures, I know of nothing so appropriate; but we have much to learn in this fertilizing matter. The acquisition and application of it, in a judicious manner, when known as it *will be*, will be worth more to our country than all our foreign commerce; but I find I am on a fertile theme and must close. Please not forget me on the soiling subject. Enclosed you will receive the subscription for two years. Please let me know how our account stands.*

Yours sincerely with respect,

BENJ. V. FRENCH.

* Paid in advance up to 1851. "Them's the sort" what is subscribers worth having. How much it would lighten an editor's labours and relieve his anxiety, if all would follow *this* "French fashion!" Some subscribers think it unreasonable to ask payment in advance, even for one year; but which is most unreasonable, for one man to wait a year for \$3 or \$8000, being himself compelled to *meet all expenses monthly*; or for one person to *risk his \$3 in advance*? Three days do not pass, after the expiration of every month, before the bills come in to us and *are paid*, for stereotyping, paper, printing, binding, clerk hire, &c.

Sixty subscribers, during the month of November, was the smallest number for the time, we have ever taken. Two of them took five copies each, commencing with the first

To the Editor of "*The Plough, the Loom, and the Anvil*."

SIR:—In your December number you earnestly desire some of your northern friends to furnish information on the subject of peat as a manure. Your zeal in a good cause entitles you to all the encouragement I can give you, and you shall have the result of my experiments. I wish it was better worth the attention of your readers.

My farm is in Essex county, Mass., and in that region peat abounds. It is much used for fuel, being easily prepared and cheaper than wood or coal. For many years I have covered my barn-yard and pig-pens with peat, which, after it has been worked over by the pigs and has absorbed the droppings of my stock, has proved on all sandy, loamy, or gravelly soils, an excellent manure for Indian corn.

Within the last six years I have carted the peat much into the fields which I have intended to cultivate, and have there made compost-heaps in the fall, which are ready for use in the following spring. My most common method has been to place in the field first a laying of peat fresh from the ditch, then a laying of horse-manure, and again a laying of peat, till the heap is raised to a height of four or five feet, covering the whole with peat muck, so that the animal manure shall not be exposed to the air. Horse-manure I have preferred, but I use the manure of my neat stock in the same manner. I apply one load of manure to three of peat. This has proved, on the soils before named, a good manure for corn, rye, oats, and all the smaller grains. To this compost, when forking it over in the spring, I have added leached ashes with good effect. As wood ashes are difficult to be obtained, and command a high price, I have been induced to make experiments to ascertain whether peat ashes would not answer as well. And I have burned large heaps of peat toppings and partly dried peat for the purpose of making ashes. These, in their partial combustion, have given me *peat charcoal* in quantity sufficient to satisfy me that it is a very valuable fertilizer. This burnt peat I have mixed with the compost before described. In December, 1848, I ploughed an acre of loamy ground which had yielded a very light crop of hay. Early in the following May, I spread on this ground twenty-five cart-loads of the compost, each load containing forty bushels, and harrowed it, mixing it well with the soil, and soon after planted with Indian corn, putting no manure in the hill, and being careful to keep in the whole course of cultivation a perfectly level surface. The field was twice cultivated and hoed, and no weeds were suffered to grow. In the early part of the season the corn did not appear very promising, but the roots soon began to reach out in search of food, and by mid-summer the corn had a vigorous and luxuriant growth, and the severe drought which affected all crops under the common practice of cultivation, (manuring mostly or wholly in the hill, and piling up the soil about the corn,) did not cause the leaves to roll or injure it in any manner. My corn was planted at the wide distance of four feet, but at harvesting I had a crop which was estimated at more than sixty bushels to the acre. For

number of the first volume, and the next day one of them informed us that he had readily found persons to take four of them. If we had not a farthing of interest in the work, instead of looking to it exclusively for a living, we would say, as we think, that every friend of domestic industry, whatever his occupation, ought to interest himself in the prosperity of "*the Plough, the Loom, and the Anvil*." Even he who does not believe in its doctrines ought to make haste to *read* and, *if he can*, refute them; for he may depend that nothing—no pestilential weed, as he may choose to think it—ever was spreading faster, or taking deeper root than is the doctrine we advocate: that is, that *for the benefit of the farmer and the planter*, we should encourage and build up the *home market*. England fixes the prices for us now: we must put ourselves in a position to fix the prices ourselves.—*Ed.*
P. L. & A.

turnips, onions, carrots, and beets, this kind of manure has proved with me equally efficacious. On a cold or clayey soil its effects might not be so satisfactory. I might add that with this manure potatoes have almost wholly escaped the rot, while with long, coarse, and unfermented dung, they have suffered greatly.

In making a compost of peat, I consider it indispensable that it should be fully rotten and decomposed. Its effects on the soil are more lasting than any animal, mineral, or vegetable manure I have ever tried. Within the last eighteen months I have made more than five hundred loads of compost, of which peat was the principal ingredient. The cost is about \$2.75 per cord: the same quantity of animal manure in that locality would cost about \$6.00.

The expense of preparing for fuel a cord of peat is equal to the expense of preparing a cord of wood, and it will produce double the quantity of ashes. The relative value of wood and peat ashes is not fully ascertained, but my own experience teaches me that there is no substantial difference. The average quantity of peat to the acre where only a single spitting of two or three feet in depth is obtained, may be about four hundred cords; and in a situation favourable to its growth, the same ground may be cut over again after the lapse of about thirty years.

The common method of preparing peat for fuel is to remove the topping, consisting of the roots of grass and bushes, and then with an instrument made for the purpose, called a peat-knife, to cut out the peat in pieces about two and a half feet long, and four inches in thickness, and spread it on the surface of the ground, where it lies till it becomes so dry and hard as to admit of being handled without crumbling, then to stack it up in piles of about twenty pieces, so as best to admit the sun and air, and in two weeks of fair weather it becomes fit to house or to burn. It readily ignites, and makes an intense and steady heat. There are varieties of peat as of wood, but that which is hardest when dried is considered most valuable.

I have been able to answer your inquiries but briefly and imperfectly; and I can now do you and the farming community no better service than to refer you to the "Muck Manual" of Professor Dana. In that book is contained the most accurate, scientific, and practical information on the nature, composition, and uses of peat.

DANIEL P. KING.

Washington, December 13, 1849.

ON THE FIELD-CULTURE OF PEAS, AND ON A DEPOSIT OF PEAT IN MARYLAND.

Near Annapolis, December 8, 1849.

JOHN S. SKINNER, ESQ.—*Dear Sir*:—You asked me, when I saw you last, whether I read "The Plough, the Loom, and the Anvil." I wish to give you some evidence that I have profited by it. You have called attention repeatedly to the use of the pea as cultivated in some of the Southern States, and published several valuable papers on the subject. A gentleman in the southern part of Virginia, several years ago, sent three or four parcels of favourite kinds to Dr. M—, who kindly gave me a portion of them. One of the kinds, a black pea, seemed to have the preference, from the fact that it was less liable to rot from exposure, and that being cultivated in the corn-field and fed or gathered, what remained might be relied on to seed the field. The land being put in oats in the spring, that crop would come to perfection, and then the pea would take possession of the ground, affording covering for the land, or food for stock, as might be desired.

I have made one very satisfactory trial of this pea sown broadcast, and ploughed in with the seed of a crop of oats. The pea did not at all interfere with the oats, but took a start after the crop was harvested, and made a fine growth. If, on further trial, it shall be found that it may be grown in this way without interfering with the crops of grain, how readily it may be introduced into our established rotations, as a substitute for clover on all light soils, whether rich or poor—the clover being on such soils, as I know by experience, a very uncertain crop,—as a substitute for clover upon lands which, after corn, are sown in oats, because not considered good enough for wheat, and which are as unproductive of clover as of wheat. In the rotation which prevails in some sections where wheat is sown upon oat stubble, the pea might intervene with great advantage to the land and the crop of wheat. And upon wheat sown on clover fallow, how readily with a drill may the pea be sown in the spring! And instead of the great growth of “rag-weed,” exhausting the land and harbouring all sorts of insects, how much better to have a crop which will fatten all the beeves and hogs, and enrich the land! I do not mention the most common mode of using it in the Southern States, that of sowing broadcast when the corn is laid by, because I think in this latitude we should not in that way get the full benefit of the crop. The great advantage of these suggestions is, that they may be adopted without interfering with any established practices, and that, with farmers, you know, is half the battle.

I have read the interesting article in your last number on Peat Charcoal as a Disinfectant of Night-soil. This peat does no doubt exist in Maryland in great quantities, and enough has been already developed in the low grounds of Hon. John S. Sellman, Mr. John T. Hodges,* and myself, to sweeten Baltimore city. It burns readily when sufficiently dried, and the ashes, as it is called, has been proved by the gentlemen named an active fertilizer. I have also tested the ashes and the compost with wood ashes or stable manure, with similar results. It burns in heaps, and indeed, in the meadow, with a slow, almost imperceptible fire, with heat enough, however, to reduce oyster-shells to lime, as I have seen. It gives off a peculiar odour during the process of burning, and is reduced very little in bulk. The result of the burning in this way is, I have no doubt, the veritable “Peat Charcoal” spoken of in your article. It is called ashes here, from the fact that the lumps are very readily reduced almost to the fineness of ashes. I have a great deal more of this material than my own land will require, and if the citizens of Baltimore want their city “deodorized,” I will furnish the “wherewithal” for a “consideration.” I look forward to the day when “animalized charcoal” will stand at the head of the list of concentrated fertilizers offered for sale in that city.

This is a hasty Saturday night’s letter, and not, of course, intended for publication. The facts are at your service.

Yours, with great regard,

N. B. W.

“The facts” do not admit of condensation, nor of any better arrangement or expression than as they here appear—so we give them as we received them. One thing only could add to their intrinsic importance, and that would be the name of the writer—one of the most zealous, enlightened, and improving, because inquisitive and reading members of the Maryland State Agricultural Society.

It is said that “constant dropping weareth away stones.” We have been for thirty years dropping testimony on the importance, to Maryland husbandry, of introducing, or rather extending the *field-pea culture*: not only for the value of the pea, but as a ready and convenient fertilizer. Well, here the mind of an intelligent farmer being given to

* See the correspondence, p. 440.

the subject, we see in his practice something promising as well as new—that is the combining of the pea with oats—making a sort of crop called *meslin*, or mixed crop, (*mélange*), mentioned in those, at the time, capital letters of the Rev. Mr. Elliott, of Massachusetts, on the Husbandry of New England, which Dr. Franklin recommended the publication of before the American Revolution.

We observe the same thing in the very excellent address of Senator Pearce—by the same thing, we mean the bringing of a clear, active, and anxious *mind* to bear upon agricultural questions. There, in his address, it will be seen, that he has overcome the most formidable difficulty in the way of cultivating lucerne, (that is, its liability to be overlaid, choked, and smothered in its infancy, by the growth of grass and weeds,) by the same expedient—*protecting it with a growth of oats*.

Here, too, we may safely say that we have fifty times called the attention of American farmers to the great value of lucerne for soiling—a value not to be disputed, except in our Northern States, where, we believe, it has been found unable to withstand the rigours of a northern winter. We shall add, in our next, the conclusive testimony of Senator Pearce to that of many others—among them that of the late gallant and venerable Col. John Eager Howard, of Maryland, and of W. Johnson, Esq., a most reliable man at Princess Anne, who cut over a lot four or five times a year, for eight or ten years, getting heavy crops for soiling his horses and cows.

The writer of the preceding letter will find, by the following, that we have not been inattentive to the subject of the peat discovered in his neighbourhood. If in all such cases the farmer does not get all the light that can be thrown on the subject, it will not be for want of good-will and willing labour on our part.

The letter of our esteemed correspondent relates to the substance referred to in the following letters. We expect a fuller account from Professor Kennedy, and in the mean time, will thank the writer of the preceding if he can send further specimens of the substance in its natural state, and as it is left on being burned, in an old segar-box, by friend Holland, the polite and obliging railroad conductor, to be left at the office of the National Intelligencer, Washington, for the Editor of “*The Plough, the Loom, and the Anvil*.”

Office of “The Plough, the Loom, and the Anvil,” November 13, 1849.

MY DEAR SIR :—I beg leave to enclose a letter from a very respectable citizen of Maryland, accompanied with a substance the examination of which seems to fall within the purview of your patriotic and useful Association for the Development of the Mineral Resources of the United States.

You would greatly oblige me if you could bestow on it a sufficient attention, before the last of this month, to enable me to make such communication to the writer, as might prove, in some measure at least, gratifying to his curiosity to know the nature of the substance to which his letter refers. As far as observation goes, you will perceive that the impression has arisen in favour of its proving to be a powerful fertilizer, and if so, it must be a deposit, very extensive and accessible, of great interest to agriculture.

To my mind, it presents another question of some interest : whether, when burned, it may or may not be used as a *deodorizer*, or powerful absorbent of gases, cheaply applicable to the preparation of *night-soil* for practical use as a manure. But you will readily apprehend, without any crude suggestions from me, the tests to which it should be subjected, and the possible uses to which it may be found applicable.

Regretting that so little time is afforded me for deriving from your association the benefit that could not fail to result from a more intimate knowledge of and participation in its proceedings, and again soliciting your kindness in the matter in question, I remain, sir, with very great respect,

Your obedient servant,

J. S. SKINNER.

To P. A. BROWNE, ESQ.,

President of the Society for the Development of the Mineral Resources of the United States.

Baltimore, November 8, 1849.

MR. JOHN S. SKINNER.—SIR :—You will herewith receive a small package containing a specimen of earth taken from the farm of John T. Hodges, in Anne Arundel county, Maryland, about one mile distant from the Patuxent river.

This earth is found in a vein of low wet marsh land, extending in length several miles, and in width varying from one to three hundred yards, and for many years it was difficult to pass over it : within the last few years it has been very much drained by many ditches cut through it in various directions, and within the last few months, after grubbing some bushes and stumps from this marshy ground, with a view of clearing it up preparatory to timothy, it was found that in burning the rubbish on the ground, the fire burnt through the turf and ignited the clay underneath the surface, and is continuing to burn at this very moment. You can perceive the smoke ascending in various places through the turf of this marsh, and wherever you see the smoke you will find the surface quite warm to the touch.

By digging down in the earth where it is burning, you will come to a hot fire resembling much the burning of a lime or coal kiln. The circumstance of its continuing to burn seems to leave no doubt but this clay must contain more or less inflammable matter. You will find in the package sent to you a sample of unburnt clay and a sample of the burnt also, both of which were taken from under the turf, in the condition in which they are now exhibited.

You will find the burnt clay is easily made fine, and can be used with great convenience on clover, grain, or any other vegetation, if it should be found to possess any fertilizing qualities.

I was shown a lot of land of a few acres, one-half of which was covered with stable-manure, and the other half with the burnt clay made tolerably fine : it had been put on the lot about four weeks previous to my seeing it, and the result was *greatly* in favour of the clay dressing.

My object in putting you in possession of these specimens of clay, is to ask the favour of you, when an opportunity may offer, to have them analyzed, and to give me the particulars, by letter, as soon thereafter as may be practicable ; in doing which you will greatly oblige

Your humble servant,

BENJ. M. HODGES.

P. S.—If this clay should possess any valuable quality, the quantity I consider inexhaustible.

Philadelphia, Thursday, December 6, 1849.

P. A. BROWNE, ESQ. :—

President of the Society for Developing the Mineral }
Resources of the United States. }

DEAR SIR :—I have pleasure in handing to you brief notes of a rough examination of specimens from Anne Arundel county, Md., transmitted to me through your politeness—regretting that your welcome note of yesterday could not earlier have refreshed my clumsy memory of dates with the forgotten fact that our Society met to-morrow night ; and assuring you that your expressed desire to have a full report for our esteemed friend Skinner's journal, shall, should the subject warrant it, not be disappointed.

Of specimens herewith sent,

No. 1 is the unburned "clay."

No. 2 is the same after ignition.

As the ignited substance is that proposed to be used for agricultural purposes, I have confined my cursory qualitative testing to that, and find it to

consist of sesquiox. iron, the sulphates of alumina and sesquiox. iron, and of alumina with traces of phosphoric acid and of lime.

No. 1 is evidently very poor, incipient peat, so infiltrated with the silt of rivers as to be useless for fuel, and yielding whatever ammoniacal and other organic salts it may contain to the decomposing agency of fire. Hence the latter will not be found in No. 2, and its efficiency must depend on its mineral constituents. Of the absolute and relative quantities of these I hope to certify you at an early day.

Your obedient servant,

ALFRED L. KENNEDY.

CULTIVATION OF PINE-APPLES.

WHY is it not attempted in America? Is it because "they would cost more than they would come to," like the Indian's gun? So do many flowers and other horticultural luxuries. For ourselves, we have no objection to see those who can afford it give their time and their money to such things. We want to see what *can* be done in all the arts, and especially in the useful ones: and besides, when wealth accumulates to a certain amount, (the great difficulty is to know *what* that is,) the sooner it overflows in almost any direction, irrigating poorer and dryer objects around it, the better for the public. We have observed about Savannah and Augusta, and Columbia, a very decided love of the ornamental in horticulture, but has any one attempted the culture of the *pine-apple*, which we should suppose might be much more easily succeeded in there than in France or England, where they have them, it seems, to attain the weight of *twelve pounds*? A writer in a late English paper says:—

"This great question of growing Ripley Queens as large as the one sent from Meudon, is decided, and that too most satisfactorily. Mr. Fleming, gardener to the Duke of Sutherland, at Trentham, has, as far as it is recorded, produced the Ripley Queen just 2 lbs. heavier than any other gardener in England. The one lately exhibited at Regent-street weighed 7 lbs. 10 oz. Others have been cut this season at Trentham, 8 lbs. 11 oz. The one shown was not a mere accidental production; there were many of similar size, for I went from London to Trentham to satisfy myself on the point. These were planted out as at Meudon, on a warm bed of soil. The air of the pit, and the soil in which they were planted, are both heated by hot-water pipes. No stable litter being used, the secret therefore could not lie in the gaseous emanations in this case. The proper situation for a pine plant is unquestionably planted out in the free soil, because it is much more favourable for the development of its true character; the roots can then stretch themselves out uninterruptedly in search of proper food, instead of being crammed into a pot with a hatful of soil to feed upon.

We have stated the size which has been already attained in this country by the planting out system of culture, but we by no means admit that this is any thing like the size that pines will yet attain, and in this opinion Mr. Fleming quite concurs.

The Meudon plan of pine growing has made, and is making, rapid progress all over the country. Gardeners express their satisfaction with it, because of its simplicity, and the large amount of trouble it saves them. I can state, from my own personal knowledge, that in twenty places where I have seen it adopted this season, not a single failure has presented itself; and although little obstacles may at first appear, they are soon overcome. It is true that where little bantlings only have hitherto been produced, 8 lb. Queens are not likely to be the result of the first trial; common sense tells us, that we should not take dwarfs as a promising stock from whence to breed giants; but no gardener need fear of obtaining equal weights with those at Trentham, or Meudon, by perseverance, neither will a really good cultivator be contented until he has reached the top of the tree, provided the means are afforded him for accomplishing his end.—*Mirabile Dictu*.

"NO HORN, NO CORN."

THIS is an agricultural axiom in England, to indicate the importance of *consuming the produce of the farm upon the land*—but very little or no value is set upon straw alone, as the material of manure. True, the incoming tenant generally agrees with the out-going one, to get out his grain and carry it to market, in consideration of his taking all the straw; but that is with a view, always, of employing other food, turnips or roots, in all cases, and generally oil cake, for feeding and for fattening sheep and cattle; relying on the straw, not for the amount of any considerable nutritious or fertilizing quality in itself, which is regarded as of little account, but rather to "fill up" the beast, and to take up and absorb his offal. We, in America, are far from estimating, as we ought to do, the bearing of the food on the *value of the manure*. We go too much for quantity, and too little for quality. In England they make nicer calculations. It is doubtful, whether any English farmer, under existing circumstances, would find his account in the mere sales of his cattle, for the expense of feeding them: there, what of the food goes to the increase of the *meat*, they call going "*to the head*,"—and what contributes to the value of the manure, they call going to "*the tail*." It is to what goes to the tail that the English farmer has his eye, when he makes up his mind to fatten bullocks.

Lately, at the bar of the House of Commons, an experienced farmer, under examination by the "*Agricultural Customs Committee*," being asked, if he considered that the beasts he fattened paid him in the increase of their *meat*, answered: "Far from that; so much so, that I once made an offer that I would give any one \$5000 a year to fat 500 bullocks on my estate."

"You calculate that on the beasts you lose about £2 [\$10] a head in the proceeds of the sale of the animal, and are only brought home by the *increased value of the manure* that is made by those beasts!"—"Exactly so." In the case of *sheep*, he thought he was a gainer by what went "*to the head*," independently of the manure, at the present price of mutton, which is twelve cents per pound in Leadenhall Market. Thus it is seen that the most enlightened farmers in England look upon the *manure of each beast*, fattened on the farm, as worth \$10, or £1000 for 500 bullocks, if the owner of the bullocks would find the food. It is thus seen too, how much would be gained where circumstances would allow the farmer to expend his labour and capital in food for stock to be fattened on his farm, instead of sending it all away, to be consumed at a distance, retaining only the mere refuse.

The practice is gaining in England, to *cut up straw* where it is to be used, not only as food, but as litter. It then absorbs more readily and completely the liquid manure, while the process of putrefaction and preparation as manure is materially accelerated.

What a field there is for inquiry! How much there is to be learned in Agriculture, *if* farmers would only learn to—learn to what?—learn to *read and to think*!!

Not a month ago, the following prices ruled in the Leadenhall (London) Market, by the carcass:—

Prime beef,	.	.	.	per pound	.	.	8½ to 9 cents.
Mutton,	.	.	.	"	"	.	11
Veal,	.	.	.	"	"	.	11
Large pork,	.	.	.	"	"	.	9 " 10 "
Small pork,	.	.	.	"	"	.	12½

ON THE CONDITION AND PROSPECTS OF AMERICAN COTTON MANUFACTURES IN THE UNITED STATES IN 1849.

UNDER this title we find, in Hunt's Magazine, a very striking article from the pen of A. A. Lawrence, of Massachusetts, elicited, as Mr. Hunt says, by a communication "*on the production and manufacture of cotton, with reference to its manufacture in the cotton-growing States.*" The article to which we here refer, as has been well said by the editor, "deserves the careful consideration of our southern friends, about to engage in the manufacture of cotton goods, coming as it does from a gentleman of large experience, and a *thorough practical knowledge of the whole subject.*"

We wish we had room to copy the article in question, not to discourage Southern men from going into the manufacture, but to prevent them from being misled and finally disappointed and disgusted by exaggerated expectations of profit. Of that we could not be suspected, after the essay in the Farmers' Library, some two years since, under the head: "*Shall the cotton be sent to the looms, or the looms be compelled to come to the cotton?*" an essay which was copied throughout the South and West, and which we venture to say, gave a powerful impulse to public opinion and the employment of capital in the cotton-growing regions. But we want our friends to moderate their anticipations, and to look to manufactures as profitable chiefly by their affording a market for other products, and supplying a constant demand for labour that would otherwise be unemployed.

Mr. Lawrence is far from being opposed to the extension of the manufacture of cotton in the South. His object is to correct misstatements, and to give timely caution, demonstrating by proof the truth of his statements.

He gives the market and the par value of shares in all the first class cotton manufacturing establishments in the North. Of these, out of twenty-seven there are but three that are not under par—many of them very much below par.

We shall probably give the whole article in our next. No one can be more thoroughly impressed than we are, with the indispensable importance of a policy that will tend to diversify labour and concentrate population, for the prosperity of agriculture; but let no man be tempted by one-sided views, or by his own enthusiasm, to *leap in the dark*. Hear both sides, compare, and *look before you leap*.

ON BLANCHING CELERY.

IN an account of Dalkeith Palace, the seat of the Duke of Buccleuch, a curious fact is stated about the management of his celery, in which there is nothing so extravagant as to prevent its affording a practical hint to American gardeners, or, at any rate, to some of our wealthy amateur suburban farmers. The celery is encased each trench within two common draining tiles, and the earth built up to them. The tiles about ten inches long, and one placed on another, as the celery proceeds in its growth. Thus, two sets (or four) of tiles will give twenty inches of blanched celery, and the tiles may be laid aside for use again.

A London paper, of October 20, 1849, says, that "Sweet-oil has been found a cure for mildew which affects grapes: the stems are brushed with the oil daily."

ON THE BEST MODE OF DIVIDING A FARM.

WE cannot permit the following to go to the printer, without saying how much it gratifies us to enrol among our correspondents one who has so long honoured us with his friendship and confidence. The writer is one of the high-bred gentlemen and pure patriots of the olden time: going back for education and early recollections and associations to the time and company of such men as Jefferson, and Madison, and Monroe, and Rufus King, and Adams, and Marshall, and Judge Brook, ay, and even to the days of Washington himself.

King George County, Virginia, September 12, 1849.

TO THE EDITOR OF THE PLOUGH, THE LOOM, AND THE ANVIL.

SIR:—In the 2d vol. of the Plough, Loom and Anvil, No. 3, for the month of September, 1849, I see that, at the request of one of your correspondents from Charles County in Maryland, you are pleased to invite some one to answer his inquiry as to the “best mode of dividing a farm; having in view the raising of clover for the improvement of the land; the keeping a good pasture for milch cows, and economy of fencing.” Availing of your invitation to do so, I shall, after some preliminary remarks, suggest a plan which, according to my experience, would be the most advantageous arrangement of a farm devoted to the production of wheat, corn, and clover, as *primary objects of profit*. Though this inquiry of your correspondent involves considerations, in my humble judgment, of vital interest to all farmers; yet there is no matter as to which a greater variety of opinion and practice exists, than as to the most beneficial mode of subdividing a farm, *primarily devoted* to the production of grain and clover. Accordingly, some divide the productive portions of a farm into three fields, or shifts; some into four; some into five; and some into six; all under separate enclosure, involving a heavy devotion of materials and labour. As only two of those shifts are by rotation annually put one in corn, the other in wheat, the consequence is, as the case may be, that one-third, one-half, three-fifths, and four-sixths of a farm thus divided remain *annually unproductive*; and those plans are severally adopted under, I respectfully think, the erroneous assumption that land derives *direct* benefit from *rest*. To illustrate the error of all such subdivisions of a farm, I assume, what must appear obviously correct, that it is as much to the interest of him whose capital is land, so to manage as to derive profit from every acre of it *annually in some form or other*, as it is to the interest of him whose capital is money so to manage as to render *every dollar* of that capital annually profitable to him; and that a moneyed capitalist who should annually lock up, or *designedly* keep in an *unprofitable condition*, a large portion of his capital, would by common consent be considered a bad manager, if not a fit subject for an asylum. In the same category is every landed capitalist who *designedly* allows, in the manner above stated, such *large portions* of his land to remain *annually and for years unproductive*. I also assume that all who acquire title to land, whether by purchase or otherwise, should decide on the object to which it was to be devoted; whether *primarily* to the production of wheat, corn, and clover; or to the rearing of stock; which, by the way, I consider two very distinct applications of land, though very commonly associated by many, to the *certain exhaustion* of the *material* which *ought to return* to the *land*, as *aliment* to plants. I allude to the too common practice of allowing stocks of all kind to graze and trample on fields *primarily* designed to produce grain. The earth is the *recipient* and *depository*, in fact the *nursery*, of all the *animal, vegetable, and atmospheric material necessary to the growth and maturity of plants*; which material, when digested and decomposed by heat and moisture, and held in solution by rain, is, by the earth, as a kind nurse,

fed away to plants through their roots, as the calf draws milk from its dam through her teats. By the operation of natural causes some regions of land are amply stocked with vegetable food, and so constituted, *if unmolested*, as to retain it for ever; while there are other regions, owing to their physical formation, deficient, and some entirely destitute of the necessary food for the growth and maturity of plants. It is therefore the obvious duty of all who own and desire to derive *profit* from land, so to manage it as to prevent an undue exhaustion of the vegetable food it may contain; as in the first case; and to supply, by artificial means, a sufficient stock of it, when found deficient from natural causes, or has become so *by injudicious management*. Having premised the foregoing views, I will go on to suggest a plan for the most beneficial division of a farm, *primarily designed* for the production of wheat, corn, and clover; having in view the improvement of the land, economy in fencing, and support of *such stock only* as may be *necessary* to the operations of the farm, and for domestic purposes; that being, in my humble opinion, the *utmost amount of stock* which can be beneficially sustained on such a farm. The first thing done by the owner of a tract of land should be, to reduce it to his *actual possession*, by a good fence on its *boundary lines*. Too many neglect to do this, and large portions of numerous tracts become dead capital for the want of enclosure. Having done this, he should decide what portion of the land he will devote to the production of wheat, corn, and clover. That portion should be enclosed in a body, by a fence around it, and divided into three equal lots or shifts; and as a preparation for the permanent rotation of crops to be recommended, I propose that one of those lots, being in due time well prepared, and at seed-time having all the manure that the farm can supply, aided by a liberal dressing with lime, is to be sowed in wheat after being immersed in strong brine and rolled in lime, by or before the 15th of September, 1849. In the spring of the year 1850, one other lot, having been in the previous month of November liberally dressed with lime, is to be put in corn; and after the cultivation of it is complete, say late in August, or very early in September, it is to be sowed in clover, to be harrowed in among the then standing corn; and as soon as the clover-seed germinates, it should be dressed with a bushel of plaster-of-Paris to the acre; and the same quantity to be put on this clover as soon as it begins to grow, in the spring of 1851. In the spring of the year 1850, the remaining lot is to be sowed in oats moistened in brine and well rolled in plaster-of-Paris. Early in August, 1850, this lot, from which oats have been taken, is to be ploughed, and at seed-time, having all the manure put on which the farm can afford, to be aided by a liberal dressing with lime, is to be sowed in wheat, as above directed. In the spring of the year 1851, the lot from which wheat was taken in 1850 is to be put in corn, to be followed by clover as above directed. And in July, 1851, the clover which followed the corn in 1850 is to be well ploughed in, and that lot, being prepared in all respects as above directed, is to be put in wheat, by or before the 15th September, 1851. Thenceforward corn is to follow in the lot from which wheat was taken in 1851. So that, in regular rotation, corn is to follow wheat, clover after corn, and wheat after clover. And after two rotations, as prescribed, the first crop of clover may be taken for hay, and thus render *every acre* of the *land devoted to production annually profitable*; since, upon this plan, one lot will annually produce a crop of wheat, the second lot a crop of corn, the third lot a crop of clover hay; thus leaving no *dead capital*.

The residue of the farm should be enclosed in three lots of nearly equal size. One of these should be annually, in regular rotation, devoted to the production of potatoes, turnips, oats, pumpkins, peas, beans, &c. &c., to be followed by suitable grass-seeds. The other two for pasture, for such stock,

and *no more*, than the *necessary operations* of the farm require, and for domestic purposes; these to be pastured on alternately two weeks at a time; —for while there may be a difference of opinion as to a *direct benefit* to land from *rest*, all who have observed must admit the *positive benefit* to grass which for a few days only is *exempt* from *stock*. Thus it is, that every acre of a farm may be rendered annually profitable, and that without an injurious exhaustion of its vegetable food, and at the same time materially diminish the amount of fencing. Assuming that all which is necessary to the growth and maturity of plants is a sufficient stock of vegetable aliment in the land on which they grow; and that this aliment is generated by the land from all animal, vegetable, and chemical material incorporated in it; the plan proposed above for the three productive lots must necessarily continue them in that condition. For example, wheat after clover, as prescribed above, must, beyond question or doubt, charge the land with a superabundant stock of aliment for the growth and maturity of that crop; and when the ample stubble left by the wheat, the clover and other grasses, and weeds which spring up after harvest, shading the earth from the injurious action of the sun during summer, and from the rigour of winter, are, in the preparation in March for corn, turned in by a sufficient plough; and by the same operation, the mass of clover and other matter turned into the land by the operation of the fallow for wheat and now all decomposed, shall be turned up and commixed with the land in which the corn is planted; there must be a sufficient stock of aliment for its growth and maturity. After this corn comes clover, which leaves the land well covered by it and the luxuriant vegetable growth after corn one year at least, when it is turned into the land, as aliment for a crop of wheat.

In addition to the all-important consideration, that this plan leaves not *an acre* of a farm unprofitable and *dead capital*, is the fact, that fields left at rest one, two, three, and even four years, become infested with all sorts of shrubs, noxious weeds, and grass; insects of all sorts, among them cut-worms, so ruinous to corn and other plants. All this, the annual cultivation of land on the plan proposed obviates, and at the same time the land is kept in a more absorbent condition, and inhales much more abundantly the fertilizing influence of the atmospheric air, and imbibes more readily the essential matter of all animal and vegetable matter decomposed on its surface. To graze land, primarily devoted to the production of grain, I consider *agricultural murder* in the *first degree*. And to allow it to remain unproductive for years, I consider an injudicious *sacrifice of interest*. For, that land derives no *direct benefit* from rest, must be evident to all who will carefully consider the matter, and refer *effects* to their *true causes*. The same means are necessary for the growth and maturity of plants that are indispensable to the growth and maturity of animals. Food is necessary as much to one as the other. And as no good farmer works his ox or horse without suitable food, so no one should put a crop of any kind on land which does not contain a sufficient stock of pabulum for the growth and maturity of it; the earth being truly to plants, what the manger is to the horse, a *depository of food*. And as the cow administers milk to her calf from her milk-bag through her *teats*, so the earth administers aliment to all vegetables and plants through their *roots* which plants send forth in *pursuit of food*.

Submitted, not by a regular correspondent, but your old and very sincere friend,—

JOHN TALIAFERRO.

We should apprehend it would be very tedious work to renovate a worn-out farm, without more barn-yard manure than this system would give. The writer goes on the supposition that *plaster-of-Paris* will act on the land; but suppose that not to be the fact, as is the case for example over the Eastern Shore of Maryland. There is but a small

portion of that where it will produce any visible effect; and then, again, in how large a portion of the country is *lime* too distant and too dear to admit of being used? What would it cost in Fauquier and Rappahannock? At what price—how high a price can the farmer afford to use? and where get the money to buy? There are no banks that will discount his paper for that purpose—not even “Planters” Banks, and “Farmers” Banks.

Is it really so, that it is impracticable in our country to raise root crops to feed cattle? Yet see what enormous crops are raised, of turnips, potatoes, carrots, &c., on quarter acres, for Societies’ prizes for the last thirty years? It were to be wished that it was possible to have, in the census, a return of the length of line of fences—stone and timber fences—in the United States. The quantity of labour and capital bestowed in that way, in any single county, would strike any one with amazement, if fully set forth.

TO OUR READERS.

SOME of you may be impatient at the space occupied in the discussion of the bearing of the Tariff laws of our country on the interests of the *farmer and the planter*, yet it is difficult to imagine any thing more directly interesting to any sensible and thoughtful man, who desires to know, as all such men must, the tendency of measures of government, to elevate or to depress the industry on which he relies for his support and well-being! We pray of all such to lay aside, if possible, all party prejudice, and to bring their unbiassed judgment to bear on these articles. They are from a gentleman who has made such subjects his study—who has no view to, or connection with, party—or care about any of the offices or patronage which party or power has to bestow. The writer is moreover a friend of free trade, to be obtained, as he believes, by resistance to the colonial policy of England. We believe we can promise to all who desire thoroughly to understand this most important of all economical questions, that in these chapters they will find the most thorough exposition of the subject that has ever yet been presented to impartial readers, who desire, like ourselves, not to be fortified in any favourite theory, or any chronic prejudice; but to *arrive at the truth!*—and we trust it must be gratifying to every benevolent mind, to be led by truth, to the welcome conclusion that, according to the laws of God and of reason, there is between the interests of all the industrial classes of our country, a friendly coincidence—that, in a word, whatever prejudice and contracted views may suggest to the contrary, as between them,

“All discord’s harmony, well understood!”

Those readers whose opinions are irrevocably formed, or who have no taste for such disquisitions, shall be required by an additional quantity of matter in subsequent numbers—we won’t say more practical matter—for what can be more practical than that which teaches the true foundation of a nation’s prosperity in agriculture, and the true nature of the relations between the *plough, the loom, and the ship?*

DAIRY ITEMS.

WE could profitably occupy some pages of our journal with several extracts from the pages of an interesting Report on the dairy husbandry and products of Essex county, Mass., where local interests and the sagacity and intelligence of the people have contributed to secure great advancement in that branch of rural economy, were it not that so many things are pressing for admission. We doubt if there be in the Union a district combining a greater share of practical industry and economy, with more general and higher intellectual cultivation. What has for us a peculiar charm, in the proceedings of this, among the oldest societies in the Union—one with which is ever associated the venerable name of that zealous and practical friend of agriculture, T. PICKERING, (who honoured us with his correspondence and good wishes in olden times,)—is, the directness of purpose and strict impartiality with which they always go to their work, their evidently clear comprehension of what may be called the philosophy or true aim of all such associations, their rigid impartiality and contempt of all clap-trap expedients for gaining individual or popular favour and support; and, after all, if not above all, the admirable perspicuity with which their decisions, and the grounds of them, are set forth in the accounts of their proceedings.

By-the-by, we should be glad to contribute, gratuitously, any thing within our possession or reach to the library of this ancient association which we see they are forming, and to collect, were that possible, at any cost, a complete set of their Annual Reports. Will the unknown, but not un-guessed-at friend, who sent the Report, please forward another to Washington.

The Committee say in their

REPORT :

We present, in a tabular form, an abstract of the several statements, supplying deficiencies by the *best guesses* (exercising our privilege as Yankees) in our power to make

No.	Name.	Residence.	Cows.	June, av.	4 months av.	Total.
				to a cow. lbs.	to a cow. lbs.	
1.	John Stone, jr.	Marblehead	4	45	155	620
2.	Daniel Putnam	Danvers	6	30	120	720
3.	Elijah Pope	"	4	28	111	444
4.	Charles P. Preston	"	7	30	112	784
5.	George Pearson	Saugus	6	30	109	654
6.	Nathaniel Felton	Danvers	8	32	110.5	884
7.	Jonathan Berry	Middleton	8	30	97.8	790
8.	Duncan McNaughton	Byfield	5	25	94.5	490
9.	John Preston	Danvers	4	26	91.5	366
10.	Nathan D. Hawks	Lynnfield	4	25	85	340

This shows an average product of *one pound* to a cow *daily*, through the month of June, and *seven-eighths* of a pound *daily* to a cow, for the four months from May 24 to September 24.

When the extraordinary drought of the months of August and September are taken into view, as also the family consumption of milk before adverted to, it is but fair to say, that the statements presented the present season, give evidence of a production of *one pound of butter daily* for each cow, for the four best months of the season.

Butter made in Orange county, New York, has the highest reputation in the market—so much so, that most New York butter passes under that name. Here the milk is churned, and not the cream. It is said "to give a peculiar firmness and fineness of texture, and wax-like appearance when it is fractured, which butter made by churning the cream seldom or never has." The art of making Orange county butter is said to be in the women, and not in the cows or pastures—you take a good dairy-maid from there, and she will make equally good butter, hundreds of miles distant. In churning the milk, it takes about one quarter part more to produce a pound of butter, than it does when the cream is severed from the milk.

On examining the products of Mr. Hall's dairy, of Chemung county, who took the first premium in the New York State Society, 1846, we find nineteen cows yielded 3189 lbs. of butter, in 180 days, or about 168 lbs. to a cow. In the same time, our fifty-six cows yielded 9174 lbs. of butter, or 164 lbs. to a cow. This comes so nearly up to the products of New York State, that we are satisfied our farmers, by proper attention to selecting their cows for the dairy, can, if they will, do as well as the best. Let them apply their true Yankee tact in this matter, and they may challenge the world.

NOTE.—As a matter of curious information, we have collected in a condensed form, the products of several of the most extraordinary cows in Massachusetts, that have come to our knowledge.

Date.	Name.		Weekly produce. lbs.	Length of time. Weeks.
826	Oakes Cow	Danvers	16	16
824	Nourse Cow	"	14	16
1828	Sanderson Cow	Waltham	14	16
1830	Homer's Cow	Bedford	14	12
1830	Hazeltine Cow	Haverhill	14	12
1830	Barrett Cow	Northampton	15	12
1845	Buxton Cow	Danvers	16	12

These cows show a product of more than two pounds per day, each, for a period of three months. We think it would be difficult to collect together such a herd.

CULTIVATION OF GRAPES.

WE shall continue to "harp" on this subject as long as we see the country filled with large land-holders, who are ever ready to give days and dollars to the success of political slang-whangers, and to spend their time in idle and frivolous dissipation, and yet have not the resolution and the spirit to plant and prune and cultivate a single vine of the Catawba or Isabella grape, for the supply and satisfaction of their family with delicious table-fruit for weeks and months—for even a single vine, as has been demonstrated for years by Dr. Gideon B. Smith, of Baltimore, and others, would be all-sufficient. For the present, we content ourselves with giving a short scrap from the London Gardeners' Chronicle, of late date, and Dr. Underhill's letter, which is a reply to one we addressed to him in consequence of having received one from some friend, whose name we cannot for the moment remember. Should this meet his eye, he will see that we were anxious to satisfy him, by information from one who has the benefit of very long and very enlightened experience. We will turn to "The Cultivator" as soon as we can, for the more particular information alluded to:—

Importance of Leaves.—I may state, that after Mr. Frost's early forced Grapes are all cut, he permits the lateral shoots to remain on the vines, alleging as his reason for doing so, that these young shoots, with their fresh foliage, maintain the roots in activity through the summer months, whereas if the vines are kept clear of laterals after the principal leaves have withered and fallen off, the roots become torpid at an early period, through the want of foliage to excite them into healthy action. I would recommend all who have the opportunity of selecting their soil, to choose loam that lies upon a porous subsoil, and that feels soft and soapy when rubbed between the fingers. A mixture of such soil, with a fourth part of half-rotten farm-yard dung, and another fourth of whole bones and mortar rubbish, will form a border in which vines cannot fail to do well, if it is made shallow (from 2 to 3 feet deep, according to the situation,) wide and well drained at bottom. The grand secret in growing good grapes is to get an abundant stock of healthy roots, and this cannot be done in a cloggy, adhesive border.—*J. B. Whiting.*

Mildew on Vines.—I am convinced from experience, that what you have written on this subject is perfectly correct. Sulphur will kill mildew, if it be applied the moment it appears. I mix the sulphur with water and then use it. Neither hot water nor sweet oil will cure mildew. It has been very bad with us here this year. Mr. Roberts thinks that our borders must be at fault; but I am of opinion that the border has nothing to do with it. It makes its appearance under all circumstances and conditions, and even our best grape-growers have lately been much annoyed with it.—*I. K. [No doubt.]*

DR. UNDERHILL ON DESTROYING THE ROSE-BUG ON VINES.

New York, Nov. 25, 1849.

J. S. SKINNER, ESQ.—*Dear Sir:*—I have just laid my hand on a letter I received from you, relative to the rose-bug, my experience of the best manner of keeping my vineyards clear of its ravages, &c. I should have returned you an answer sooner, if I had not mislaid it. I must refer you to a communication I made to the Editor of the Cultivator, some four or five years since, on this subject; premising, however, that I take the rose-bug from my grape vines (while in blossom) *by hand*, passing a small cup, with some water or soap and water in it, under the part of the leaf or young cluster on which the insect is placed, touching it at the same time, he will fall at once into it. A few men will remove them very rapidly from the vineyard in this manner. We attend to them for ten to twelve days after they first show themselves, by passing round near the circumference of the vineyards, where they are most abundant. By destroying them every year they will become less troublesome.

Yours truly,

R. T. UNDERHILL.

CUMBERLAND ONE-HORSE CART.

It was expected that one of these carts would be exhibited at the Norwich Meeting of the Royal Agricultural Society, but as this was not the case, we have been supplied by Messrs. Ransomes and May, of Ipswich, with the following particulars of one which has been sent to them by our own correspondent, "L. V. R.," see *Agricultural Gazette*, May 12, page 298:—The one-horse cart we have received from Cumberland is a specimen of good workmanship, and of the proper application of materials. It is reported to us as usually carrying a ton of coal; and with large coal, not friable, we do not doubt this quantity can easily be packed on it, but it would not hold near so much of Newcastle coal, which cannot be heaped much above the sides. The strength of the framework and wheels is quite adequate to even more weight. The following particulars are taken carefully from the cart itself:—

	ft. in.		ft. in.
Length of body inside at top, ...	5 4	} average	5 1
Do do. do. at bottom, ...	4 10		
Width inside at top, ...	3 7½	} average	3 3¾
Do. do. at bottom, ...	3 0		
Average depth of sides, ...			1 3½

The cubic content of the body, without heaping, is therefore 21½ cubic feet. There is a light framework attached when straw, hay, or similar material has to be carried, which consists of two cross pieces of ash, each 4 feet 11 inches long, 2½ inches deep, and two inches wide, resting on and bolted to the top rails of the cart-sides, close to the ends. On these cross pieces are fastened two longitudinal bars of ash, 8 feet 5 inches long, 2½ inches deep, by two inches wide; and these are again connected by three other cross-pieces, 4 feet 11 inches long, 2 inches wide, by 1¾ inches; one in front, another 13 inches therefrom, and the other at the back end. This frame, when in its place, projects about 2 feet 2 inches from the front, and about 1 foot 1 inch from the back of the body of the cart. The wheels are 4 feet 3 inches in diameter, with 12 spokes and wood naves. The tire is 2½ inches by ¾ inch thick; the fellies 3 inches deep by 2¾ wide; iron arms and boxes; the diameter of the former, at the shoulder, being 2¾ inches, and connected together by a bar of iron bedded in a wood cross-tree 5 inches by 4½ inches, and upon this are three blocks, 6½ inches deep, to raise the body of the cart. The naves are 11½ inches diameter, and the same in length. When the shafts are horizontal the floor is 3 feet 3 inches above the ground, and in this position the inside of the fellies of the wheels at the ground are 4 feet 1 inch apart, and at the highest part 4 feet 7 inches, and taking the distances at the front and back at the height of the centre, they are 4 feet 3½ inches, and 4 feet 4½ inches respectively.

	cwt.	qrs.	lbs.
The weight of cart without frame, ...	6	0	20
The weight of the frame, ...	0	1	26
Total, ...	6	2	18

The total length of shafts and cart, 13 feet 7 inches, and the size of the shafts at the front end of the body, 4½ inches by 3¼ inches. As the shafts form a portion of the frame of the body, the cart does not "tip" or "tilt." When the cart is empty and the shafts horizontal, the bearing weight upon the backband is 33 pounds.—*Ransomes and May, Ipswich.*

THE YEAR THAT HAS PASSED, AND THE ONE THAT IS
TO COME,

WHAT OF THEM?

THE Editor of "*The Plough, the Loom, and the Anvil*" greets his patrons and friends with the compliments of the season, and hails the new year, in the hope that it comes pregnant with the elements of accumulating progress in knowledge and virtue, the best of all securities for the peace and happiness of the world.

Without meaning to inflict on our readers the old homily, on the obvious duty of us all, to review the past, in a spirit of determination to reform the future; we must take leave to tender them, very sincerely, our best wishes for many happy returns of the season; and the assurance of unfeigned gratitude, for the countenance and support they have contributed to this journal, its editor—its objects—and its principles. And here, as to these objects and principles, the occasion must be embraced to ask, that when any friend of "*The Plough, the Loom, and the Anvil*," shall hear it charged with indicating *party* spirit and aims, in the usual acceptance, they will, in our name, as we do here, most solemnly deny the charge, and challenge the proof of it!—unless there be the spirit of *party*, and not of a broad American patriotism, in our desire, avowed from the first, to see carried out, in our legislative action, that old *distinguishing* and *characteristically republican doctrine*, which, as all well know who are old enough to remember it, taught us to foster a policy that would protect, develope, and bring into full play, the resources which a bountiful Providence has bestowed on ours *above all countries on the globe*—unless there is in fact the narrow and baleful spirit of *party*, in preaching the doctrine avowed by General Jackson, when he said "*we have been too long subject to the policy of British merchants, it is time that we should become a little more Americanized.*" It is, we conscientiously believe, that policy of the "British merchants" and British government, which disturbs and deranges the natural course of industry, and retards the growth and prosperity of every country in the world that submits to it. It is in resistance to that colonial policy of England, for the enforcement of which she starves her own people, and taxes the industry of the world, that, in our sincere belief, is to be found *the only road to real freedom of trade!* If, in such resistance, there be any sign of *party* spirit, it is, we admit, under that sign that we have enlisted; *because*, and only *because*, we believe that the agriculture of no country ever did, or ever can flourish under any other. With this, we hope final explanation, we shall go on, endeavouring to show, against the impious doctrines of the Malthusian school, that there is in the benevolent designs of Divine Providence, a *real and perfect harmony of interests* between all the great industrial pursuits of our country, when those designs are not perverted by false legislation, based on false principles of economy; principles which would fore-doom the human race, and persuade us that its growth and progress is for ever to be restricted by inevitable poverty, misery and crime, and these of *Divine appointment!* We thank God, that such is not our politics—such is not our religion—we believe that Providence gave us the coal to be mined, the ore to be smelted, and our water-powers to be improved, and not to be left yet for ages unemployed, as before the Revolution, to subserve the *colonial policy of England*. And here we shall content ourselves with adding, with indignant denial of all *party* spirit and *party* designs—that in thirty years of public service, in various and very responsible trusts, pecuniary and confidential, under appointments from MADISON, MONROE, ADAMS, JACKSON, and HARRISON, during which very many gentlemen have

received and held their employment and income at our discretion, we defy any one, and here publicly call upon all who have been our colleagues or subordinates to say, that we ever, on any one occasion, inquired into, or intimated the least desire to know, the political sentiments of any individual among them. It was, in fact, our invincible determination never to look to any thing but character, fidelity, and capacity, that caused us to be *Van-burened* out of one office and *Polked* out of another, though it was well known, in both cases, that, for the time, we should be left utterly destitute of all present means of support, except our own industry and *never-failing willingness to work*.

One word more. During more than thirty years that we have controlled agricultural and other publications devoted to industrial and liberal pursuits, there never has been a time, *nor is that time now*, that any man could get permission to insert a *single line*, with a view to *mere party aims or influence*. And hence it is that we reiterate that all charge or insinuation of having any thing to do with, or any care about the rise or fall, the success or the defeat of this party or of that, so as far as this journal is concerned, is here flatly denied, and again we *challenge the proof*.

Our firm persuasion is, that if this question of encouragement and protection to American labour, and capital which gives employment to labour, could be withdrawn from the arena of party, to which the people are summoned by demagogues to look at it, with their passions and prejudices previously excited and inflamed, as are the friends of two pugilistic combatants in the ring, that in that case, viewing it calmly as a national question, it would be considered as essentially one of *American independence*, or of dependence on the policy of British merchants and monopolists; and that the verdict in favour of protection against the more than half-starved and not half-paid labour of Europe would be as preponderating as was that of the voice of our ancestors in favour of the *declaration of the 4th of July, 1776!* But it is *only and strictly* as an *agricultural question*, one that has a direct bearing on that great interest that we look at or care about it.

Entertaining these opinions, and having resolved and promised to devote all our remaining time and capacity to discover and point out the *true and only foundation for general agricultural advancement and prosperity*; would we not be derelict in our duty, ought we not to be ashamed to look an honest farmer in the face, if we did not follow the course we are pursuing? If gentlemen believe we are wrong, why do they not answer us? Have we refused to publish any man's argument? On the contrary, have we not gone out of our way to publish the dissertations of those who have *so politely* denominated ours as "absurd"—"ridiculous"—"contemptible?" Is it because it is much easier to denounce than to refute? Of one thing they may be assured—the poison, if such they consider it, is spreading with prodigious rapidity; and if they have any antidote to apply they are bound to lose no time, for the day is coming, and not far distant, when American farmers and planters will see that the nearer the loom and the anvil, as well as the grist-mill and the saw-mill, the *better for the plough!* That it *is* time, to use the language of Jefferson, that we should place the consumer by the side of the producer!

☞ WE have several very able agricultural addresses, from which, if we could find room, we should be glad to take extracts at least—for it would be impossible to give them in full. We hope to make up in our next for the want of variety in this number.

☞ ALL letters merely on the business matters of this journal, will be addressed to us as usual at 79 Walnut street, Philadelphia; but all of a more particular kind, requiring personal attention, had better be addressed at once to Washington, D. C.

The Plough, the Loom, and the Anvil.

VOL. II.

FEBRUARY, 1850.

No. VIII.

THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

CHAPTER FOURTH.

HOW PROTECTION TENDS TO INCREASE PRODUCTION AND CONSUMPTION.

Two systems are before the world: on the one hand, that which is denominated protection, and on the other that which is denominated free-trade. Each claims to be the one under which the labourer receives the largest reward for his exertions, and it is for the purpose of testing the validity of those claims that I have given the numerous tables contained in the last chapter, by aid of which I now propose to examine this question in its bearings on the various portions of society. It is the great one for the Union, for *in it are included all others*. The discord now existing between the North and the South has its origin in the diminished value of the returns to slave labour. If it can be shown that by one and the same system the interests of the North and the South, the free and the enslaved, can be promoted, harmony may take the place of discord. The differences in regard to internal improvements by aid of the general government have their origin in a necessity for scattering ourselves prematurely over large surfaces. If it can be shown that by one and the same system the North, the South, the East, and the West, can be enriched, and all enabled to make roads for themselves, harmony may be restored. The discords so frequently existing between the employer and the employed, the capitalist and the labourer, the banker and his customers, may all, as I think, be traced to one and the same cause, and if that can be removed, harmony and good feeling may be restored and maintained. Every question affecting the peace and tranquillity of the Union, or the people of the Union, will be settled whenever we shall have determined for ourselves the one great question—"Which is the system under which the labourer obtains the largest reward for his labour?" When that shall come to be done, it will be seen that there is a perfect harmony of interests throughout the Union, and among all its people.

Before proceeding further, I would urge upon the reader a careful examination of those tables, bearing always in mind the precise position of the question that is to be discussed. It is *admitted* by all that protection tends to increase the domestic production of the commodity protected. That, therefore, does not require to be proved. It is *asserted* that protection tends to raise the price of the protected article and to diminish the power of consuming it, whereas the removal of protection diminishes its cost and increases the power of consumption. That is denied, and *that it is which requires to be proved*. If this assertion be true, then the power of consumption must diminish with protection. We see, however, that the consumption of iron, of coal, of cotton, and of wool, increased with great rapidity in the years between 1830 and 1834, and in those from 1843 to 1847. If it be true, the quantity of men and things passing on the roads and canals, and the number of exchanges to be performed in our cities, should diminish with protection,

whereas they increased with great rapidity in both of the above-named periods. If it be true, then it must reduce the wages of labour, and thus diminish the inducements for foreigners to come among us and occupy our vacant lands, whereas immigration increased with great rapidity under both protective tariffs. If it be true, then it must diminish our power to trade with foreign nations, and the inducements to build ships, whereas shipping grew with great rapidity in both those periods.

If, now, we examine the period between 1834 and 1843, it is impossible to avoid being struck with the fact that the power to consume foreign products not only did not increase as domestic production diminished with the approach to free trade, but that it was actually less in quantity than under the system of protection. The building of furnaces and rolling-mills was stopped, yet we consumed less foreign iron than before. So was it with cotton goods, the import of which fell from above *fifty* millions of yards down to *eight* millions. We killed off our sheep, but the importation of foreign cloth diminished. We prevented increase in the domestic consumption of cotton, but shipping did not grow with the increased necessity for depending on foreign markets. We adopted a course that we were assured would raise the wages of labour, but immigration ceased to grow. So is it now. The building of cotton-mills is stopped, but our whole import of last year, in which we incurred a debt of twenty-two millions, but little exceeded a pound per head. We have closed furnaces and rolling-mills, but we consume far less iron than before. We have abolished the system that was regarded as "a war upon labour and capital," yet immigration is diminishing and there is no demand for capital. Steam-engines are idle, and there is no demand for new ones, except for a few steam-vessels. Railroad tolls are diminishing, and steam-boats on the Western waters are idle. Iron is low in price, but it is not wanted. So is coal. So are cottons and woollens. So is almost every description of merchandise. The power of consumption is diminishing, because the demand for labour and capital has largely diminished.

The power of the people to pay taxes for the support of government is dependent upon their power to consume commodities that are taxed, and if protection diminished wages, it must of course diminish revenue; but when we examine the facts, it is shown that, notwithstanding a great increase of the free-list, the revenue increased under the tariff of 1828, and fell off so much afterwards that the government was compelled almost to beg for loans in the markets of Europe. With the tariff of 1842 it grew rapidly, but with that of 1846 it is diminishing in actual amount per head, notwithstanding the purchase of more than twenty millions of goods on credit in a single year. If that debt were now called for, the revenue of the current year would not exceed that of 1842.

The question to be settled is—"Does the power to import grow with the diminution in the power to produce that follows the withdrawal of protection?" If it does, the facts must prove it. There is no question that the power to produce iron and cloth grows with protection. That is, as I have already said, admitted by all. Were it not, the facts prove it. The burden of proof lies, then, with the opponents of protection. To establish their system they must show that the power of production and consumption grows now as it grew three years since, and that it grew from 1835 to 1843 as it grew from 1830 to 1834.

The first thing that must strike all who examine the tables given in my last is the universally diminutive amount of foreign products received in exchange for the vast bulk of cotton, grain, provisions, &c., sent to foreign countries. Thus in 1842-'43 the import of cotton cloth was much less than a yard per head of the population, and less probably than one-fourth of a

pound of cotton. In other years we see that it has varied from two to four yards, but in no single year has our consumption of cotton that has passed through foreign looms materially exceeded a pound per head.

The returns from Europe received for all our products may be summed up nearly as follows: fifty cents' worth of iron, half a pound of wool, about as much flax, one or two ounces of silk, and China and earthenware equivalent to a tolerable cup and saucer, to which may be added the *twisting and weaving* of a pound and a half of cotton, per head. To obtain all this we give a large portion of the land and labour of the cotton-growing States, and of those employed in raising tobacco and rice, together with as much food as would feed men, women, and children who could twist and weave five times the cotton, wool, silk, and flax we import, and the use of more capital in horses, wagons, railroads, engines and cars, steam and canal boats, ships, wharves and warehouses, than would be necessary for machinery to convert all our cotton into cloth, and make more iron than has ever been made in Britain, and almost as much labour as would do the work—and *withal, we are brought in debt*. It is certainly using great means for the accomplishment of small ends.

Every portion of the tables tends to prove that while the amount of foreign commodities received in payment for our exports increased in the

sumption—

trade, has appeared to be followed by exhaustion and bankruptcy, while every increase in production at home, consequent upon protection, has been but the preparation for a new and larger increase—sometimes so great as to cause a feeling of apprehension that it was unnatural, and could not be maintained. To what extent this could be carried has never been ascertained, for the only two periods of perfect protection have each been limited to four years. To understand the cause of this, it would be well for the inquirer to examine for himself the facts that become obvious to sight, whenever and wherever a factory or furnace has recently been set in operation. Those presented at Graniteville, S. C., are thus described by a highly intelligent correspondent of "The New York Herald:"—

"The effect of the erection of this manufactory in the neighbourhood is almost magical. Hundreds have found employment among the poor of the white inhabitants, who were, before, almost destitute. A Methodist and a Baptist church have been erected. A free school has been opened, and about 70 pupils attend. There is a large and convenient hotel, where I am writing this letter. The town is laid out in streets, and already over 80 dwelling-houses, very neat and comfortable, with gardens attached, have been put up, which rent from \$16 to \$25 per annum. The girls in the factory are, some of them, very pretty, and are well dressed; and, from what I can learn, the change in their appearance is extraordinary. The superintendent, Mr. George Kelly, who came out here and placed the factory in operation, went with me through the manufactory and town. He informed me that he only brought with him four or five experienced persons from the

North—all the rest in the factory, about 300, men, women, and children, are from the Sand Hills and immediate vicinity, where they, one year ago, were earning nothing. They make now from four to five dollars, (males,) females from three to four dollars, and children one to two dollars per week. Some of the girls, who are now well dressed and appear very intelligent, a year ago were at work in the field, hoeing corn, or ploughing with a horse; others were idle; now they reside in comfortable boarding-houses, where they pay \$1.50 per week for board, and can lay up money. Their education is attended to, and they are on the road to become useful and productive citizens. In fact, since Christmas, over forty marriages have taken place between the young male and female operatives in the factory. They were brought together in it, became attached, and got married. In such a case, the wife generally leaves the factory to attend to the house-keeping arrangements of the new couple, and the husband continues in the factory, which gives them an independent support.

"The grounds around the factory are laid out with a great deal of taste, and I have not seen, in a long while, a more prosperous and thriving place. New houses are going up every week. The applications for work are double what they can possibly employ. They could obtain, in the district, 400 male and female operators, who are without any work, if they could give them employment."

The following account by Mr. Bryant, Editor of "The Evening Post," is descriptive of facts presented by a mill recently erected in Barnwell District, S. C.:—

He adds that "at Graniteville, in South Carolina, about ten miles from the Savannah river, a little manufacturing village has lately been built up, where the families of the *crackers*, as they are called, reclaimed from their idle lives in the woods, are settled and white labour only is employed. The enterprise is said to be in a most prosperous condition."

"The buildings are erected here more cheaply," he continued; "there is far less expense in fuel, and the wages of the work-people are less. At first, the boys and girls of the 'cracker' families were engaged for little more than their board; their wages are now better, but they are still low. I am about to go to the North, and I shall do my best to persuade some of my friends, who have been almost ruined by this Southern competition, to come to Augusta and set up cotton mills."

The labour employed in building these mills was clear profit. The men and their families were there, and they had to be supported by somebody, whether they worked or not. All the labour employed in working the mills is profit. The people have begun to produce. From unproductive consumers they have become productive consumers. In their former condition they could consume scarcely any clothing, or utensils requiring iron for their manufacture, or furniture, or books, or newspapers—scarcely any thing, indeed, but food. Having become productive, *the whole surplus* may go to the purchase of other things than food, and thus is made a market for cloth and iron and other commodities, that before had no existence. *Every producer is a consumer to the whole extent of his production*, and by enabling these poor people to produce more, the planter

makes a market on the land for the products of the land, to the extent of the whole excess of production. The more that is produced, the more *must* be consumed.

This assertion may at first appear to be one of doubtful truth, yet a little examination will, I think, suffice to establish its perfect correctness. The man who earns six dollars a week, lays by one of them, which he carries to the saving-fund, which lends it and other similar dollars to some one who desires to build a house. He pays it out to workmen who purchase with it food and clothing, and thus is that surplus dollar consumed. The capitalist, with his savings, builds houses, or ships, or factories, and the workmen whom he employs purchase food and clothing, and the use of houses, with his money. The average consumption of a year always is *and must be* equal to the average production, and if we desire to know the extent of the one we have but to ascertain that of the other.

In 1839 we imported forty-three millions of yards of cotton cloths of various kinds, the consumers of which were customers to the planter to the extent of eleven millions of pounds of cotton, or less than 28,000 bales, being as much as would be worked up by twenty-eight mills of moderate size, or fourteen of larger size. To produce those mills in any single cotton-growing State would require no effort whatsoever, and when produced it would be found that they would be all profit, for it would be attended with not the

A great error exists in the impression now very commonly entertained in regard to national division of labour, and which owes its origin to the English school of political economists, whose system is throughout based upon the idea of making England "the workshop of the world," than which nothing could be less natural. By that school it is taught that some nations are fitted for manufactures and others for the labours of agriculture, and that the latter are largely benefited by being compelled to employ themselves in the one pursuit, making all their exchanges at a distance, thus contributing their share to the maintenance of the system of "ships, colonies, and commerce." The whole basis of their system is *conversion* and *exchange*, and not production, yet neither makes any addition to the amount of things to be exchanged. It is the great boast of their system that the exchangers are so numerous and the producers so few,* and the more rapid the increase in the proportion which the former bear to the latter, the more rapid is supposed to be the advance towards perfect prosperity. Converters and exchangers, however, must live, and they must live out of the labour of others: and if three, five, or ten persons are to live on the product of one, it must follow that all will obtain but a small allowance of the necessaries or comforts of life, as is seen to be the case. The agricultural labourer of England often receives but eight shillings a week, being the price of a bushel and a half of wheat.

say that the cause of diminished product cannot there be found. They are right, but in so saying they condemn the system. The duty on coal was reduced in order that the labourer might obtain fuel more readily, but it has become so much more difficult to procure it that the consumption is already sensibly diminished, with every prospect of a further diminution. The total import of iron, and of cotton cloth, is as nothing compared with the growth of the product in the years from 1843 to 1847, and thus we see that the supply diminishes instead of increasing in its ratio to population, under a system that was to enable the labourer, and the farmer and planter, more readily to obtain cloth and iron.

It is not so much that coal needs protection for itself—or that iron or cotton need it for themselves—but that each needs it for the other. The producer of coal suffers because the furnace is closed, and the producer of iron suffers because the factories are no longer built, and the maker of cloth suffers because labour is everywhere being wasted, and the power to buy cloth is diminished. The harmony of interests—agricultural and manufacturing—is as perfect as is that of the movements of a watch, and no one can suffer without producing injury among all around. The grower of cotton suffers when the operatives in cotton factories and the workers in mines and furnaces are unemployed, and the latter suffer when adverse circumstances diminish the return to the labour of the farmer and planter.

There are more labour and the products of labour wasted in the States south of Mason and Dixon's line, than would, *ten times over*, convert into cloth all the cotton they produce, and more in the States north of it, than would, *ten times over*, produce all the iron made in Great Britain. This may appear a large statement, yet it is less than the truth, as will be clearly seen on examination. If evidence of this be desired, look to the fact that the manufacture of cottons and woollens doubled in five years—and that of iron, which in 1843 was under 250,000 tons, reached nearly 800,000 in 1847. Did this diminish the products of agriculture? Was not, on the contrary, the supply greater than was ever before known? We added at least two hundred millions in manufactures, not only without diminution elsewhere, but with a larger increase than had ever before taken place, and it was precisely when the home consumption had become so immense that the assertion was made that we had three hundred millions of bushels of food for which we needed a market. All this labour was saved labour, and much of the things employed would otherwise have been wasted.

Look next to the other fact, that it was *precisely when the growth of manufactures was arrested*, from 1835 to 1839, that the supply of food became so short that, notwithstanding diminished consumption consequent upon high prices, we were compelled to import wheat to the amount of more than four millions of dollars in a single year, and it will be seen if the experience of the two periods—1835-'41, and 1844-'47—does not prove conclusively that the nearer the loom and the anvil are brought to the plough, the larger is the return to the labours of the ploughman. Could it be otherwise? The nearer the place of exchange, the less of labour and manure are wasted on the road, and the more uninterruptedly is labour applied, upon a machine constantly increasing in its powers. The demand for lumber enables the farmer to sell his trees, and with the product he drains his land, and thus is enabled to cultivate more and better land. The more distant the loom and the anvil, the more labour and manure are wasted on

Should the inquirer desire to view the effect of this waste of labour, on a large scale, he could not now do better than visit the valley of the Schuylkill. Doing so, he would find there all the labour and all the machine-power requisite for the production at market of 60,000 tons of coal per week,

obvious from the fact that immigration increases. Men go from low wages to seek high ones. From 1829 to 1834 immigration grew. Thence to 1843 it was almost stationary. Thence to the present time it has increased with vast rapidity. Henceforward, if the existing system be maintained, it must diminish, for the power to obtain food and clothing, fuel and house-room, wages, has declined.

That the productiveness of labour increases is obvious from the rapid growth of canal and railroad tolls, and their stationary condition with every approach to the policy that tends to the separation of the loom and the anvil from the plough and the harrow. So again with the growth of steamboats, and of vessels generally. The more there is produced, the more can be consumed, and the more will go to market.

There is, as it appears to me, no single point of view from which we regard the facts now passing before our eyes, in which we shall not find confirmation of the correctness of these views. Were all the machinery now used in Lowell and Providence, for the manufacture of coarse cloths, taken out and replaced by that fitted for making fine cloths, and muslins, and silks, the product would be ten times as much as we now import, with little increase in the quantity of labour employed. Were all that coarse machinery then distributed throughout the South, it would enable the people of Southern States to convert into cloth three hundred thousand additional bales of cotton, not only without diminution in the agricultural export, but with an increase, for labour would then be more advantageously applied. To accomplish all this, by building mills and making machinery, would require an amount of labour equal to but a very small portion of that which is now wasted in a single year, and *not as much as is this year wasted in Pennsylvania alone.*

The people of the North would then have called into action a higher degree of intellect than is now required, and wages would rise, and the consumption of woollen and cotton cloth, of silks, and of sugar, and tea, and coffee, would grow rapidly. The people of the South would find the same effects. Their own consumption of cotton would be quintupled, while they would consume more and better food than now. They would need better houses, and the demand for timber and stone would clear their land, and wealth and population would give them better roads, and the men who came to make roads would eat food and wear coarse cottons, and thus the planters themselves would be enabled to become large customers for the fine ones produced in the North.

Consuming more tea and coffee, the producers of those articles would be able to purchase more cotton, and thus the planters' market would grow on every hand. The demand for machinery, for furniture, and for thousands of other things, would produce new improvements in manufactures, and the producers of tea and coffee, sugar and cotton, would be enabled to consume more largely of them, while the makers of machinery and furniture would need more iron, more lumber, and more cotton.*

* I take the following from *The Cincinnati Gazette*, as evidence of the vast amount of smaller articles, composed of things that would be wasted, and prepared, much of it, by labour that would be wasted but for the proximity of a market:—

“What our larger manufactures for the South are, is well understood, especially by persons familiar with the machinery of sugar plantations. Our small manufactures, consisting of bagging, buckets, tubs, ploughs, &c., are less known. The exports of some of these for four seasons, will serve to show both the requirements of the South in this respect, and our ability to supply them.

On the other hand, let us suppose the cotton mills closed, and the supply of cloth diminished to the extent of all that is produced from 600,000 bales of cotton—the furnaces closed, and the supply of iron diminished to the extent of 800,000 tons—and the coal mines closed, and the supply of fuel diminished to the extent of three millions of tons—could we import and pay for the deficiency? Would the whole cotton crop then bring more than we now obtain for three-fourths of it? It would not. Our power to import foreign cloth and iron, and fuel, would not only not be increased, but *it would be diminished*, and we should consume one pound of cotton per head instead of ten or twelve. The power to pay for all the cotton and iron produced at home, results from the saving of labour, and with the disappearance of the power to save that labour would disappear the power to consume what are now its products. Union between the producer and the consumer at home, would, therefore, appear to be more profitable than union with people abroad and disunion among those at home.

CHAPTER FIFTH.

WHY IS IT THAT PROTECTION IS REQUIRED?

If all the labour employed in converting food and cotton into cloth, and food, ore, and fuel into iron, be really saved labour—if the whole result be really profit—why is it that men should require protection to enable them to produce cloth and iron? The question is a natural one, and should be fully answered.

It is because it is saved labour, and because the loom and the anvil are merely subsidiary to the plough and the harrow that protection is required. The first and great object of man is, to obtain food and the materials of clothing for himself and family. Neither is fit for use in the form in which it is yielded by the earth—the great machine of production. The grain requires to be ground, and the wool to be spun and woven. He pounds the one and his wife endeavours to convert the other into cloth of some description, however rude. They work with bad machinery, and they lose much time, and yet the loss is less than would be the case were they to carry the grain to the distant flour-mill, or the wool to the yet more distant woollens-mill. By degrees population increases, and the blacksmith comes to exchange horse-shoes for food. The carpenter comes to exchange labour for food. The saw-miller comes to exchange the labour of himself and his

	1845-'46.	1846-'47.	1847-'48.	1848-'49.
Alcohol, bbls.	1,615	1,844	1,771	3,022
Brooms, doz.	1,584	5,108	3,760	3,333
Bagging, pieces		8,867	12,632	15,910
Candles, boxes	6,757	16,622	29,180	39,640
Cooperage, pieces	18,388	41,121	36,924	55,617
Lard oil, bbls.	1,690	6,199	8,277	9,550
Linseed oil, bbls.	455	6,032	3,878	3,020
Soap, boxes	2,708	10,080	11,295	11,308
Starch, boxes	2,499	5,826	8,179	7,904
White lead, kegs				29,417
Sundry manufactures, packages	7,957	22,251	42,418	94,934

“These small manufactures are too often overlooked by persons from abroad who survey this populous city, and wonder how it came and what it is doing out here in the heart of what was nothing but a wilderness half a century ago. But they really constitute, as every one familiar with them knows, one of the main elements of our prosperity. And behind them lie many others, contributing their share to our comforts and our growth, which as yet enter only slightly into our export trade, and consequently are not included in our commercial tables.”

machine for food. In all these cases we see combination of action, and with its growth men obtain horse-shoes and houses more readily than before. Next the little grist-mill comes, and the miller gives the labour of grinding in exchange for food to eat. Again, the little woollens-mill comes, and the miller gives his labour to the carpenter and saw-miller for labour and lumber, to the blacksmith for his iron work, and to the farmer for food and wool. Next the little furnace comes, and the furnace man, in like manner, exchanges with his neighbours, and with the progress of combination of action men obtain, at every step, food, fuel, clothing, iron, furniture, and houses, with increased facility. The first and great desire of man is that of association with his fellow-man, and it is so, because he feels that improvement of his condition, physical, moral, mental and political, is its uniform accompaniment.

Throughout this country, there is a want of combination. Men are perpetually flying from each other, scattering themselves over large surfaces, and wasting the labour that if saved would make them rich. This inability to combine their exertions is the result of artificial causes; and the adoption of the protective system has been produced by an instinctive effort to obtain by its aid that which, had those causes not existed, would have come naturally and without effort.

If we now look to the early history of these provinces, we shall see the gradual tendency towards the establishment of furnaces, woollen-mills, &c. for the purpose of enabling men to combine their exertions for obtaining iron, cloth, and other of the necessities of life with the least loss of labour in the work of transportation, whereby they might be enabled to economize their own labour to be employed in the work of production, while their sons and daughters were obtaining wages in the conversion of wool into cotton, or ore into iron.

The object of the colonial system was that of "raising up a nation of customers," a project "fit only," says Adam Smith, "for a nation of shopkeepers." He was, however, inclined to think, that even for them it was unfit, although "extremely fit for a nation whose government was influenced by shopkeepers." As early as the period immediately following the Revolution of 1688, we find the shopkeeping influence exerted for the "discouragement" of the woollens manufacture of Ireland; and while the people of that unfortunate country were thus prevented from converting their own wool into cloth, they were by other laws prevented from making any exchanges with their fellow-subjects in other colonies, unless through the medium of English ports and English "shopkeepers."

Such being the case, it was little likely that any efforts at combination of exertion among distant colonists, for rendering labour more productive of the conveniences and comforts of life, should escape the jealous eyes of men whose shopkeeping instincts had prompted them to the adoption of such measures in regard to nearer ones. The first attempt at manufacturing any species of cloth in the American provinces was followed by interference on the part of the British legislature. In 1710, the House of Commons declared, "that the erecting of manufactories in the colonies had a tendency to lessen their dependence upon Great Britain." Soon afterwards complaints were made to Parliament, that the colonists were setting up manufactories for themselves, and the House of Commons ordered the Board of Trade to report upon the subject, which was done at great length. In 1732, the exportation of hats from province to province was prohibited, and the number of apprentices to be taken by hatters was limited. In 1750, the erection of any mill or other engine for splitting or rolling iron was prohibited; but pig-iron was allowed to be imported into England duty

free, that it might then be manufactured and sent back again. At a later period, Lord Chatham declared, that he would not allow the colonists to make even a hob-nail for themselves. Such is a specimen of the system, with regard to these colonies. That in relation to the world at large shall now be given.

By the act, 5 George III. [1765,] the exportation of artisans was prohibited under a heavy penalty.

By that of 21 George III. [1781,] the exportation of utensils required for the manufacture of woollens or silk was likewise prohibited.

By that of 22 George III. [1782,] the prohibition was extended to artificers in printing calicoes, cottons, muslins or linens, or in making blocks and implements to be used in their manufacture.

By that of 25 George III. [1785,] it was extended to tools used in the iron and steel manufactures, and to the workmen employed therein.

By that of 39 George III. [1799,] it was extended to colliers.

These laws continued in full force until the year 1824, when the prohibition as to the export of artisans was abolished, and all those relating to the export of machinery so far relaxed that "permission may now be had for the exportation of all the more common articles of machinery," discretion having been given to the Board of Trade, which decides upon each application, "according to the merits of the case." But little difficulty is now, it is said, experienced by merchants, who generally know as to what machines "the indulgence will be extended, and from what it will be withheld," almost as certainly as if it had been settled by act of Parliament; yet, it is deemed advantageous to have it left discretionary with the Board, that they may have "the power of regulating the matter, according to the changing interests of commerce."* Under this system, the whole quantity of machinery exported in the eleven years, from 1824 to 1835, averaged but two hundred thousand pounds per annum.†

We see thus, that the whole legislation of Great Britain, on this subject, has been directed to the one great object of preventing the people of her colonies, and those of independent nations, from obtaining the machinery necessary to enable them to combine their exertions for the purpose of obtaining cloth or iron, and thus *compelling* them to bring to her their raw materials, that she might convert them into the forms that fitted them for consumption, and then return to the producers a portion of them, burdened with great cost for transportation, and heavy charges for the work of conversion. We see, too, that notwithstanding the revocation of a part of the system, it is still discretionary with the Board of Trade, whether or not they will permit the export of machinery of any description.

Had it not been that there was a natural tendency to have the producer of iron and cloth, and hats, to take his place by the side of the producer of food and wool, there could never have arisen any necessity for such laws as those passed in relation to Ireland and the colonies, and had that tendency not existed, the laws prohibiting the export of machinery would never have been required. It did exist, and it does everywhere exist, and it was for the purpose of preventing the gradual development of a natural state of things, and bringing about an unnatural one, whereby Great Britain might be made "the work-shop of the world," that those laws were passed. The object of protection has been, and is, to restore the natural one.

The effect of those laws has been that of bringing about an unnatural division of her population. The loom and the anvil, in that country, instead of being second to the plough, have become first, with great deterioration in

* Porter's Progress of the Nation, Vol. I. p. 320.

† Ibid. p. 323.

the condition of both labourer and capitalist. For a long period, the few engaged in manufactures made vast fortunes; while the owners of land were enabled to obtain enormous rents, because the consumers of food increased more rapidly than the producers of food. Land gradually consolidated itself in fewer hands, and the little occupant of a few acres gradually gave way to the great farmer, who cultivated hundreds of acres by aid of hired-labour. The few became richer, and the many went to the poor-house. The value of labour, in food, was diminished, and the value of capital was also diminished, because both were, as they still are, shut out from employment on land, the only employment in which both can be used to an indefinite extent, with constant increase in the return to labour.

By degrees, however, machinery was smuggled out of England, and artisans escaped therefrom; and at length there arose a necessity for legalizing the export of both, and from that time it is that manufactures on the continent of Europe have made great progress. The people there, however, have, like ourselves, laboured under great disadvantages. England had monopolized machinery for so long a time that she had acquired skill that could not readily be rivalled; while she had, by this improper division of her population, kept the price of labour and capital at a lower point—proportioned to the advantage with which they might have been applied—than among her neighbours. Her establishments were gigantic, and always ready to sink those who might undertake competition; while the unceasing changes in her monetary arrangements, the necessary consequences of the colonial system, were of themselves sufficient to spread ruin among all the nations connected with her. Our own experience has been that of all the world.

The necessary consequence of the existence of such a state of things, was resistance by the various independent nations of the world, in the form of tariffs of protection; one of the first results of which was the modification of the law prohibiting the export of machinery. From that period to the present, she has been engaged in an effort to under-work other nations, despite their efforts to shut her out, and with each stage of her progress the condition of her operatives, as well as that of her farm labourers, has deteriorated. Women have been substituted for men, and children of the most immature years for women, and the hours of labour have been so far extended as to render Parliamentary interference absolutely necessary. That interference was opposed, on the ground that all the profit of the machinery resulted from the running of an additional hour. In the mining department of her trade, the system is the same, and it is impossible to read the Parliamentary Reports on the condition of her manufacturing and mining labourers, without being horrified at the awful consequences that have resulted from this effort to tax the world by monopolizing machinery. The moral effects are as bad as the physical ones. Frauds of every kind have become almost universal. Flour is substituted for cotton, in the making up of cotton cloths, to such an extent that, fifteen years since, the consumption for this purpose was estimated at forty-two millions of pounds.* The quality of iron, and of all other commodities, is uniformly reduced to the point that is required for preventing other nations from producing such commodities for themselves.

By the census of 1831, it was shown that the number of families in England and Wales was 3,303,504, of which 1,170,000 were those of agricultural occupants, or of agricultural and mining labourers, producers of things to be

* "These goods are generally smoother and more evenly made than American fabrics of the same cost; but they must be used in their dry state, as in washing their appearance is very much changed."—*Dry Goods Reporter*, Nov. 1849.

converted or exchanged; leaving 2,133,000 for the converters and exchangers, and for the money-spending classes—paupers on one hand, and state annuitants, noblemen and gentlemen, on the other. Thus the products of one labourer had to be divided among three.

By the census of 1841, it was shown that, notwithstanding an increase in the last ten years of 960,000 in the number of adult males, there had been an actual diminution of 19,000 in the number employed in agriculture, and thus we have almost four persons to consume the products of one.

Since that date, the tendency has been in the same direction. The transporters, converters, and exchangers have been steadily and rapidly increasing in their proportion to the producers.

With each step in her progress, she thus becomes less a producer, and more and more a mere exchanger, dependent upon the profits of converting and exchanging the products of other nations. This steadily increasing disproportion between the producers and the exchangers, brought about the state of things that led to the repeal of the corn laws, since the date of which there is an evident increase in the tendency to become a mere exchanger of the works of other men's hands. The amount of her trade does not grow with the growth required by this change. The farmer may live and maintain his family out of a crop of five hundred bushels, or even less. The shopkeeper, to live as well, must pass through his hands five thousand bushels; and what is true of the individual shopkeeper is equally true of a nation of shopkeepers, as I will now show.

The man who raises his own food, and sells of it to the amount of \$100, has that sum to be applied to the purchase of clothing and other of the comforts of life. He is selling the product of his own labour.

The man who buys food to the extent of \$100, and sells his products for \$200, has but \$100 to be applied to the purchase of other things than food. To the extent of one-half he is selling the produce of the labour of others.

The man who buys food and leather, each to the extent of \$100, must sell \$300 worth of shoes to give him \$100 to be applied to the purchase of other things than food. To the extent of two-thirds he is selling the labour of others.

So is it with nations. When they sell their own products, their power to purchase from others is equal to the whole amount sold. When they sell the products of others, whether in the same or any other form, their power of purchase is only to the extent of the difference between the price paid and the price received. The bale of cotton exported as yarn, is but the bale imported as wool, and, to the extent of the cost of the wool, represents no part of the power to purchase for consumption. The barrel of American flour exported in the form of cloth or iron, is but the barrel of flour imported, and represents no part of the power to purchase coffee, tea, or sugar.

The actual or declared value of the exports of the produce and manufactures of Great Britain and Ireland, was,

From 1815 to 1819, annual average, . . .	£44,000,000
“ 1827 to 1834, “ “ . . .	38,000,000
“ 1845 to 1848, “ “ . . .	50,500,000

From these sums is to be deducted, in all cases, the cost of the raw material required to produce the commodities exported.

The quantity of cotton manufactured in the first period amounted to 100,000,000 of pounds per annum, and the average price was 19 pence,*

* McCulloch's Com. Dict., art. Cotton.

making the whole cost about £8,000,000. The value of cotton goods exported was £16,500,000, of which the raw material may have been about £5,500,000.

The consumption of foreign wool was about 7,000,000 of pounds weight, and with this exception the whole amount of the export was of domestic production.

The import of food amounted to about 1,500,000 quarters, or 13,500,000 bushels of 60 pounds weight.

Putting together all the foreign food and raw materials required for the product of £44,000,000 of exports, the total cost could scarcely have exceeded £12,000,000, leaving £32,000,000 as the value of domestic products and labour exported by a population of 21,000,000, being equal to about £1·10 per head, or \$7·20, to be applied to the purchase of foreign commodities for domestic consumption.

In the second period, the quantity of cotton manufactured averaged about 275,000,000 of pounds, and the price had fallen to about 8d., making the cost about £9,000,000. The proportion exported had somewhat increased, judging from the difference between the quantity as given by the official value, and the product as given by the declared value, and the amount of labour had decreased, the exports of mere yarn having risen from £1,200,000 to between four and five millions. The value of the raw cotton thus exported may have been £6,000,000.

The quantity of foreign wool retained for home consumption had risen to 30,000,000 of pounds, being an important portion of the quantity exported in the form of cloth.

The average import of food was, as before about 1,500,000 quarters. If, now, we estimate the total consumption of food and other raw materials at £14,000,000, and deduct that sum from the amount of exports, we shall have remaining £24,000,000 as the value of the products and labour exported by a population of 23,000,000, being about 21s. or \$5 per head, to be appropriated to the purchase of foreign commodities, other than grain, for consumption.

In the third period, the declared value of cotton goods exported had risen to about £25,000,000, and the cost of the raw cotton required for this purpose, in the year 1846, was estimated at about, . . . £8,500,000

And in the year 1847, at 8,800,000 . . .

For 1845 and 1848, the average was about . . . 7,350,000

making a total average of £8,000,000. To this must now be added the wool of Australia, Spain and Germany, of which the manufacture had risen to 70,000,000 of pounds; the silks of Italy and China; the hides, the indigo and other colouring materials, the gold, and innumerable other articles used in the production of this large amount of manufactures; and I shall be safe in putting the whole amount, for those years, at not less than £14,000,000, and it is probably much more.

The import of flour and grain averaged about 6,250,000 quarters, and as the last of those years amounted to about five and a half millions, it may be safe to assume that the average quantity required will not fall materially short of six millions, equal to fifty-four millions of bushels of sixty pounds each, and if the cost of these be averaged at 4s. per bushel, the amount will be £10,800,000*

* The amount actually expended in fifteen months is stated to have been £33,000,000. This, however, was an exceptional case, and my object is rather to show from the past what may be taken as an average of future years.

If, now, we add for vast quantities of live-stock, pork, beef, lard, butter, cheese, and other articles of food, the whole consumption of which was formerly supplied at home, only

1,000,000
We shall have a total of 25,800,000

24,700,000

To be deducted from the gross amount of exports, and leaving only

as the value of the export of the products and labour of the twenty-seven and a half millions composing the population of the United Kingdom, being about 18s. or \$4.32 per head, to be applied to the purchase of sugar, tea, coffee, rice, spices, and numerous other foreign articles of food—for lumber, tobacco, foreign manufactures of every description, and for the purchase of the cotton, silk, wool, dye-stuffs, hides, &c. &c., required for the manufacture of clothing used at home.

We have here a constantly diminishing quantity to be applied to the purchase of various descriptions of food that from luxuries have become necessities of life, and that of the materials of clothing. It follows, of course, that as food is the article of prime necessity, the amount that each expends of clothing is very small indeed; the consequence of which is, that the people of England, engaged in furnishing cheap clothing to all the world, are not only badly fed but exceedingly badly clothed, the cost of clothing, in labour, being so great as to place it beyond their reach,* the amount that can be expended for that purpose tending rather to decrease. Whenever a good crop causes a large quantity of cotton to come to market, the price falls to the point that is necessary to enable the purchaser at home to absorb the surplus that cannot be exported; and when the crop is short, the consumption is limited to the quantity that can be purchased by the small amount to be expended. The whole sum now applicable to this purpose appears not to vary greatly from 2s. per head, sufficient to purchase three pounds at 8d., or six pounds at 4d. This will be seen by an examination of the following table:—

* By reference to the report of the Assistant Commissioner charged with the inquiry into the condition of women and children employed in agriculture, it will be seen that a change of clothes seems to be out of the question. The upper parts of the under-clothes of women at work, even their stays, quickly become wet with perspiration, while the lower parts cannot escape getting equally wet in nearly every kind of work in which they are employed, except in the driest weather. It not unfrequently happens that a woman, on returning from work, is obliged to go to bed for an hour or two to allow her clothes to be dried. It is also by no means uncommon for her, if she does not do this, to put them on again the next morning nearly as wet as when she took them off.

The evidence laid before Parliament in regard to the situation of the operatives in coal mines, showed that men and women, boys and girls, were accustomed to work together in a state of absolute and entire nudity.

The slowness with which the power of consuming other articles than clothing has grown is remarkable.

In 1803, that of paper was	31,699,537 pounds.
1841, with almost double the population, only	97,103,548 “

The great diminution in the cost of cotton and linen cloth had been attended with a corresponding reduction in the cost of rags, while there had been great improvements in the mode of manufacture. The quantity of labour that could be exchanged against paper had evidently diminished.

The consumption of candles in 1801, was	66,999,080 pounds.
In 1830 it was	116,851,305 “

having little more than kept pace with the population.

Average cost of Cotton in England.				Home consumption.		Money price, per head.	
		d.				s.	d.
1845	.	4 $\frac{3}{4}$	.	170	millions	about	2 4 $\frac{1}{2}$
1846	.	5	.	155	"	"	2 3
1847	.	6 $\frac{3}{8}$	.	80	"	"	1 7
1848	.	4 $\frac{1}{2}$	.	170	"	"	2 3

We see, thus, that she clothes her people at the cost of the cotton planter. She has a certain quantity of labour that she can give in exchange for cotton, and the price of the whole import is regulated thereby. If the crop is large, she takes a great deal for the money; if it is small, she takes but little; and thus the producer not only derives no benefit from large crops, but is so much injured thereby, that it is actually more profitable to have one of 2,000,000 of bales, than one of 2,700,000. Had that of the present year reached three millions, he would have been ruined, for freights would have been high, while prices abroad would have fallen to a lower point than has ever yet been reached.

Instead of applying her labour to the cultivation of her own soil, she pursues a course having for its object that of compelling all the farmers and planters of the world to make their exchanges in her markets, where she fixes the price for the world. Her power to apply the proceeds of labour to the purchase of other commodities than those of prime necessity is small, and gradually but steadily diminishing; and whenever the labours of the producer are rewarded with liberal returns, he is nearly ruined, because the price falls below the cost of production.

The system is altogether so remarkable that at some future day it will be deemed almost impossible that it should ever have been tolerated. She has a certain quantity of the means of transportation and conversion, and being thus provided she desires that all the cotton and sheep's-wool of the world shall be brought to her, that it may be spun and woven, and that she may take toll for spinning and weaving it. The more that is brought to her the less of it she gives back to the producer, and the price she pays him fixes the price he receives from all the world. How the system works may be seen from the following statement:—

	1815 to 1819.	1827-1834.	1845-1846.
Cotton consumed, lbs.	100,000,000	275,000,000	596,000,000
Value	£8,000,000	9,000,000	11,400,000

She pays for this in cotton-cloth and iron, the prices of which, at these periods were as follows:—

A piece of calico, of 24 yards	16/6*	7/6†	6/7
A ton of merchant-bar iron	£11‡	£7 5	£9 10

Had the whole been paid in these, the planter would have received of

Cloth, pieces	9,700,000	24,000,000	34,700,000
Or iron, tons	730,000	1,250,000	1,200,000

The *additional* freight, home and foreign, charges, commissions, &c., in the last period were, at three cents per pound, on 496,000,000 of pounds, say \$15,000,000. For this the planter would receive, in *Liverpool*, 470,000 *additional* tons of iron, the value of which, in *Liverpool*, at the present moment, would be about \$11,000,000, and thus he not only gave away his cotton, but gave with it a large portion of the cost of transportation. The whole return to him for 600,000,000 was not as great as it had been to 100,000,000.

It thus appears that notwithstanding all the improvements in manufacture, the planter had to give in the last period *six times* the quantity of cotton to

* McCulloch's Statistics, Vol. II. p. 70.

† This is the average of the years from 1831 to 1834, as given in Burns's Commercial Glance, and copied in the Merchants' Magazine, Vol. XIX. p. 277.

‡ Average of 1817 to 1819—Merchants' Magazine, Vol. XX. p. 337.

obtain *three and a half times* the cloth that he could have had in the first—and *six times* the quantity to obtain a *smaller quantity* of iron. A more admirable mode of taxing the world was certainly never devised.

The result of the system is, that the productiveness of agricultural labour is declining in every portion of the world that does not protect itself against this “war upon labour and capital,” as I will now show.

Consumption is measured by production. Every man is a consumer to the whole extent of his production. To that point he will go, and beyond it he cannot go. The first of his wants is food; next comes clothing; after this follow the conveniences and luxuries of life. If his productive power increases, his power to obtain clothing increases rapidly, because the whole surplus is applicable to other things than food. If it diminishes, his power to obtain clothing diminishes with great rapidity, for food he must have. That it has diminished, and is now diminishing rapidly, will, I think, be evident from the following facts:—

Sixty years since, the price paid by the consumers of cotton to the producers of it was estimated at \$40,000,000.

From 1827 to 1834, both inclusive, the crops of the United States averaged 945,000 bales, and the home consumption about 145,000, leaving 800,000 for export. The average price was about \$40 per bale, and the product \$32,000,000.

In this period, India continued to produce extensively of cotton, and to manufacture cotton goods. The China market was not opened to the free traders until 1831, and it required some time to substitute the cotton cloth of England for the cotton and cloth of India. With every day that has since elapsed, the production of cotton has declined, as the manufacture has been passing towards annihilation. Cotton was then extensively raised in the West Indies, Brazil, Egypt, Africa, Mexico, and elsewhere; and the total product, exclusive of that of the United States, was estimated at 450,000,000 of pounds, or about one-fifth more than that of the Union. Averaging the whole at the same price, we should now obtain an annual expenditure, excluding our own, for cotton wool, of \$78,000,000.

From 1842 to 1848, both inclusive, the crop averaged 2,060,000 bales, and the home consumption about 400,000, leaving 1,660,000 for export. Two hundred thousand of these may be given to the Zollverein, and other countries of Europe that have protected themselves against the system, not as the increased quantity actually taken under low prices, but as that which would have gone at high ones, leaving 1,460,000 for the quantity that may be supposed to be influenced by the system. The average price, during that period, was seven and a half cents, or \$34 per bale, and the average product of the portion of the crop thus exported, \$50,000,000.

Since then, the cultivator of this most important commodity, throughout the world, has been ruined, and it is greatly to be doubted if the whole production, outside of the Union, is now more than one half of what it was thirty years since; but, at the utmost, it cannot exceed 270,000,000; and if we now assume that quantity, and, as before, put the whole at the same price, we shall obtain, as the amount paid for cotton, by almost the whole population of the world, outside of the Union, as follows:—

For the crop of this country,	.	.	\$50,000,000
For that of the rest of the world,	.	.	20,000,000
			\$70,000,000

Showing a large reduction, notwithstanding the increase in the number of persons employed in its production, and the increase of those who should consume it, and yet the case, as here stated, does not represent the real

diminution in the amount paid to the producers. Of the cotton of India, nearly the whole value is now swallowed up in freights, and while the cost to the consumer is large, the yield to the producer is scarcely more than two cents per pound. A more full examination of the subject would, I believe, result in showing that the producers of cotton, taken as a body, do not receive in return for all the clothing material that has to so great an extent superseded wool, flax, &c., from the people of the world outside of the limits of the Union, twenty millions of dollars more than they did sixty years since.

A similar examination of the movement in regard to sugar, coffee, wool, and other articles, would yield the same results, for the exhaustion is everywhere the same. The whole effect of the system is that of reducing the farmer and the planter—the producers of the good things of the world—to the condition of an humble dependence upon the owners of a quantity of small machinery for the conversion of wool into cloth, that they themselves could purchase at the cost of less labour than, for want of it, they waste in each and every year.

Let us now look to the results, as exhibited in the immediate dependencies of England.

With this vast increase in the importation of food from abroad has come the ruin of the people of Ireland. Deprived of manufactures and commerce, her people were driven to live by agriculture alone, and she was enabled to drag on a miserable existence, so long as her neighbour was content to make some compensation for the loss of labour by paying her for her products higher prices than those at which they might have been elsewhere purchased. With the repeal of the corn laws, that resource has failed; and the result is a state of poverty, wretchedness, and famine, that has compelled the establishment of a system which obliges the landowner to maintain the people, whether they work or not; and thus is one of the conditions of slavery re-established in that unhappy country. From being a great exporter of food, she has now become a large importer. The great market for Indian corn is Ireland—a country in which the production of food is almost the sole occupation of the people. The value of labour in food, throughout a population of eight millions, is thus rapidly decreasing.

From an inquiry instituted by Lord Clarendon, in 1847, and conducted in the most careful manner, it was ascertained that out of 20,800,000 acres of which the kingdom consists, there were but 5,200,000 under crop, and that the yield of cereal grains, chiefly oats, averaged 10 bushels (of 70 pounds) per head, while that of potatoes was 561 pounds per head. The cattle amounted to 2,591,000, or less than one to three persons of the population; the hogs to 622,000, or one to thirteen; and the sheep to 2,186,177, or one to four. Such are the products of a nation, exclusively agricultural, whose numbers were about one-half those of the people of the Union, at our last census.

Were it possible now to ascertain the quantity of food, per head, produced in Great Britain and Ireland, it is probable that it would be found to be less than it was five years since, and that the whole quantity, foreign and domestic, was not materially greater than at that date. If so, it follows that the whole amount of labour expended in purchasing and fashioning the cotton of other lands to be given in exchange for food, is lost labour, and that the average quantity of food and of other commodities obtainable throughout the kingdom in return for any given quantity, tends downwards instead of upwards; and that such is the case there is reason to believe. As evidence that such is the fact, we may take the expenditure for support of paupers, which in 1837 was £4,207,000, and for 1844, 5, and 6, averaged £5,890,000,

being an increase of forty per cent. in eight years. In 1848, it had attained the enormous height of £7,800,000. If now to this we were to add the expenditure for the same purpose in Ireland, we should find the growth to be absolutely terrific.

As a full answer to this, the English economist would point to the increased consumption of certain commodities; but that increase is maintained, as we have seen, by the oppression and ruin of the agriculturist everywhere. The whole system has for its object an increase in the number of persons that are to intervene between the producer and the consumer—living on the product of the land and labour of others, diminishing the power of the first, and increasing the number of the last; and thus it is that Ireland is compelled to waste more labour annually than would be required to produce, thrice over, all the iron, and convert into cloth all the cotton and wool manufactured in England. The poverty of producers exists nearly in the ratio in which they are compelled to make their exchanges in the market of Great Britain, foregoing the advantages that would result to them from the free exercise of the power of associating for the purpose of combining their exertions, and thus rendering their labour more effective.

The manufacturers of India have been ruined, and that great country is gradually and certainly deteriorating and becoming depopulated, to the surprise of those of the people of England who are familiar with its vast advantages, and who do not understand the destructive character of their own system. The London *Economist* says:—

“Looking to our Indian empire, we cannot but be struck with the singular facilities which—in climate, soil, and population—it presents to the commerce of Great Britain. At first sight, it seems to offer every thing that could be devised, in order to induce to a commercial intercourse almost without limit. There is scarcely one important article of tropical produce which is consumed in this country, either as the raw material of our manufactures, or as an article of daily use, for the production of which India is not as well, or better, adapted than any other country; while its dense and industrious population would seem to offer an illimitable demand for our manufactures. Nor are there opposed to these natural and flattering elements of commerce any fiscal restrictions to counteract their beneficial results. Indian produce has long entered into consumption in the home markets on the most favourable terms; while, in the introduction of British manufactures into India, a very moderate duty is imposed. Yet, notwithstanding all these advantages, it is a notorious fact, deducible alike from the tendency which the supply of some of the most important articles of Indian produce show to fall off, and from the stagnant, or rather declining, state of the export of our manufactures to those markets—and, perhaps, still more so, from the extremely unprofitable and unsatisfactory result which has attended both the export and import trade with India for some time past,—that there exist some great and serious impediments to the realization of the just and fair hopes entertained with regard to our Indian trade.”

Another writer* speaks of it as a country whose exports are rapidly diminishing. Sugar, he says, does not increase, while indigo decreases, and cotton is reduced one-third to one-half. The revenue is deficient. Gazerat and Cutch, which once supplied cotton to half the world, have almost ceased to produce it. The growth and manufacture of cotton have disappeared from Bengal, which once gave to the world the Dacca muslins, the finest in the world. Cotton fields have everywhere relapsed into jungle.

Year after year we are told of efforts being made to increase the product and improve the quality of India cotton, and yet year after year the prospect of improvement becomes more remote, and necessarily so, because agricultural improvement under the existing impoverishing system is im-

* London correspondent of the National Intelligencer.

possible. For a short period, premiums were granted on what is called free sugar—to wit, that raised by the wretched Hindoo who perishes of starvation, the consequence of the system—and while that policy was maintained its cultivation made some progress, but since the abolition of the restrictions on slave-grown sugar, every thing tends downward.*

Ireland and India are thus in the same condition. The West Indies are ruined, and Canada, Nova Scotia, and New Brunswick, now seek annexation, that they may have protection from a system under which they are being ruined. The owner of land, everywhere, knows that it would be doubled by the change, and the labourer transfers himself to the south of the boundary-line, that he may find employment and good wages, which cannot be found at the north of it. Those who remain north of it now anxiously seek for admission for their grain, because protection maintains a market that now they cannot have.

In the existing state of things they have to compete with the low-priced labour of Russia and Poland, and are ruined. They desire, therefore, that their competition may be with the protected farmers and labourers of the Union.

Lord Sydenham, in a letter to Lord John Russell, which accompanied his Report on Emigration to Upper Canada, observed :

“Give me yeomen, with a few hundred pounds each, who will buy cleared farms, not throw themselves into the bush, and I will ensure them comforts and independence at the end of a couple of years—pigs, pork, flour, potatoes, horses to ride, cows to milk—but you must eat all your produce, for devil a purchaser is to be found: however, the man’s wants are supplied, and those of his family; he has no rent or taxes to pay, and he ought to be satisfied.”

Here is the cause of the desire for annexation that now exists throughout Canada. There are no consumers at hand, and the farmer cannot exchange his corn for cloth or iron, the consequence of which is, that labour and land are almost valueless. So is it everywhere. Every colony therefore desires to separate itself from England, and all would gladly unite with these United States, and for no other reason than that they might have protection.

That the colonial system is rapidly approaching its close must, I think, be obvious to all who take the trouble to inform themselves of the condition of the people of her colonies, who have been compelled to bear with it; and thence satisfy themselves that the independent nations of the world must continue to increase and to strengthen their measures of resistance until it shall be ended, that thenceforth there may be perfect freedom of trade.

It is “a war upon the labour and capital of the world.” Its object is that of preventing the spinner and weaver from combining their efforts with those

* “For many years they [Messrs. Arbuthnot & Co., of Madras] have been the most extensive manufacturers of sugar in Southern India, converting to the extent of thousands of tons annually the coarse jaggery made by the ryots into the fine product which finds its way into the market; but the attempt to raise the cane was first tried about two or three years since, and it is needless to say that no cost or skill was spared to render it successful. Planters were brought from the West Indies at liberal salaries to direct the cultivation, and machinery of the most complete and extensive character was imported from England to irrigate the soil and manufacture the sugar on the spot. No project could possibly be set on foot under circumstances more favourable, but the upshot is that the land taken in Rajahmundry and Dawlaishwarum has been relinquished, and the cattle turned into the fields of standing cane. * * * *

“The question of competition to be maintained on the existing system with the West Indies and the countries in which slave labour prevails must rest for future consideration. At present we have arrived at the important conclusion, that, under the most favourable circumstances, we cannot hope to alter the present mode of cultivating the sugar-cane in Southern India.”—*Athenæum*.

of the farmer and planter,—compelling the latter to work alone, and therefore disadvantageously, and then to give two-thirds of the crop for the maintenance of horses and wagons, ships and men, brokers and merchants, whose services would not be needed were the system abolished. Its effects have been everywhere, to render men depressed and poor. Desiring to liberate themselves from it our ancestors made the Revolution, and the Canadians have now formed a league, induced thereto by their observance of the wonderful results that have been here obtained.

Thus far, the system has been maintained at home by this power to tax the world for its support. India contributes three millions sterling per annum,* but there is a gradual diminution in the power to pay. Canada and the West Indies have paid their share, but the connection with the former is likely soon to be at an end, and the latter are ruined. This country is the main support of the system, but that support is gradually being withdrawn, and when it shall be absolutely so, the destructive effects of it upon England herself will become fully obvious. It will then be seen that the wealth of that country is really, to use the words of Carlyle, but a magnificent “sham.” The few are rich, but the many are poor, and the mass of wealth is by no means great.

The whole amount of capital invested in buildings, machinery, &c. for the cotton manufacture, in 1834, was estimated at twenty millions of pounds sterling† or less than a hundred millions of dollars, being only double what has been expended in the effort to bring into activity the anthracite coal mines of Pennsylvania. She has also machinery for the production of a large amount of coal and iron, but the same quantity could be produced in this country in a few years, without an effort. She has made a considerable amount of rail-roads, but she broke down under the effort, and yet roads are made in that country at far less cost than here, and we have now more miles in operation.

The nominal cost of her roads is great, because the prices paid for land are high, and large sums are paid to lawyers, conveyancers, &c., &c., but these are merely transfers of property, not investments of it. The real investment is only the labour employed in grading the road, erecting the bridges, and getting out the iron, and the cost of these per mile is less than for any well-made road in this country. The power of England to make investments of labour is less than half of what it was in this country from 1844 to 1847, and less than one-third of what it would now be had the production of coal, and iron, and cotton goods been allowed to increase at the rate at which it was then increasing. Her system tends to the enrichment of the few, and hence there results a show of wealth far, very far, beyond the reality.

The impoverishing effects of the system were early obvious, and to the endeavour to account for the increasing difficulty of obtaining food where the whole action of the laws tended to increase the number of consumers of food, and to diminish the number of producers, was due the invention of the Malthusian theory of population, now half a century old. That was followed by the Ricardo doctrine of Rent, which accounted for the scarcity of food by asserting, as a fact, that men always commenced the work of cultivation on rich soils, and that as population increased they were obliged to resort to poorer ones, yielding a constantly diminishing return to labour, and producing a constant necessity for separating from each other, if they would

* “Altogether it has been calculated that the tribute which India pours into the lap of England is at least equal to three millions sterling.”—*Parker's Progress of the Nation*, Vol. iii. p. 354.

† McCulloch's Statistics, Vol. 2, page 75.

obtain a sufficiency of food. Upon this theory is based the whole English politico-economical system. Population is first supposed to be superabundant, when in scarcely any part of the earth could the labour of the same number of persons that now constitute the population of England obtain even one-half the same return. Next, it is supposed that men who fly from England go always to the cultivation of rich soils, and therefore every thing is done to expel population. Lastly, it is held that their true policy when abroad is to devote all their labour to the cultivation of those rich soils, sending the produce to England that it may be converted into cloth and iron, and they are cautioned against any interference with perfect freedom of trade as "a war upon labour and capital."

Colonization is urged on all hands, and all unite in the effort to force emigration in the direction needed to raise up "colonies of customers." It is impossible to read any work on the subject without being struck with the prevalence of this "shopkeeping" idea. It is seen everywhere. Hungary was to be supported in her efforts for the establishment of her independence, because she was willing to have free trade, and thus make a market for British manufactures. The tendency of the Ricardo-Malthusian system to produce intensity of selfishness was never more strikingly manifested than on that occasion.

It happens, unfortunately, that the system is without a base, the fact being exactly the reverse of what it is stated by Mr. Ricardo to be. Throughout the world, and at all periods of time, men have commenced the work of cultivation upon the poorer soils, leaving to their successors the clearing of river bottoms and the draining of swamps; and the increase of population it has been that has everywhere enabled men to subject rich soils to cultivation.* Food, therefore, tends to grow faster than population, when no disturbing causes exist, and in order that the increase of population may take place, it is indispensable that the consumer take his place by the side of the producer. When that is not the case, the inevitable consequence is that the waste of labour is great, and that the perpetual cropping of the land returning to it none of the refuse, exhausts the land and its owner, and compels the latter to fly to other poor soils, increasing the transportation and diminishing still further the quantity of cloth and iron to be obtained in return to a given amount of labour.

We thus have here, first, a system that is unsound and unnatural, and second, a theory invented for the purpose of accounting for the poverty and wretchedness which are its necessary results. The miseries of Ireland are charged to over-population, although millions of acres of the richest soils of the kingdom are waiting drainage to take their place among the most productive in the world, and although the people of Ireland are compelled to waste more labour than would pay, many times over, for all the cloth and iron they consume.† The wretchedness of Scotland is charged to over-

* For a full examination of this question I must refer to my book, "The Past, the Present, and the Future."

† Of single counties, Mayo, with a population of 389,000, and a rental of only 300,000*l.*, has an area of 1,364,000 acres, of which 800,000 are waste! No less than 470,000 acres, being very nearly equal to the whole extent of surface now under cultivation, are declared to be reclaimable. Galway, with a population of 423,000, and a valued rental of 433,000*l.*, has upwards of 700,000 acres of waste, 410,000 of which are reclaimable! Kerry, with a population of 293,000, has an area of 1,186,000 acres—727,000 being waste, and 400,000 of them reclaimable! Even the union of Glenties, Lord Monteagle's *ne plus ultra* of redundant population, has an area of 245,000 acres, of which 200,000 are waste; and for the most part reclaimable, to its population of 43,000. While the barony of Ennis, that abomination of desolation, has 230,000 acres of land to its 5,000 paupers—a proportion which, as Mr. Carter, one of the principal proprietors, remarks in his circular advertise-

population when a large portion of the land is so tied up by entails as to forbid improvement, and almost to forbid cultivation. The difficulty of obtaining food in England is ascribed to over-population, when throughout the kingdom a large portion of the land is occupied as pleasure grounds, by men whose fortunes are due to the system which has ruined Ireland and India.* Over-population is the ready excuse for all the evils of a vicious system, and so will it continue to be until that system shall see its end, the time for which is now rapidly approaching.

To *maintain* it, the price of labour in England must be kept steadily at a point so low as to enable her to underwork the Hindoo, the German, and the American, with all the disadvantage of freight and duties. To *terminate* it, the price of labour in England must be raised to such a point as will prevent that competition and compel her to raise her own food, leaving others to consume their own, and such must be the result of the thorough adoption of the protective system, even by the United States alone.

The cause of the difficulty in which England now finds herself is the unnatural disproportion between consumers and producers. Men are cheap and therefore undervalued. Establish a market for these men, and their value will rise, and such will be the effect in every part of Europe. We have seen that immigration into this country increased in the period between 1830 and 1834, from twelve to sixty-seven thousand; that from that period to 1843 it remained almost stationary; and that in the last four years it has more than trebled. Now, let us suppose that the system of 1828 had been maintained, and that the mining of coal, the smelting and rolling of iron, and the manufacture of cotton and woollen cloths, &c. had gone on uninterruptedly, producing a great demand for labour to be employed in the various branches of manufacture, in the making of roads, the clearing of lands and the building of houses, and that the inducements for emigration to this country had been constantly increasing to such an extent as to cause the

ment for tenants, "is at the rate of only one family to 230 acres; so that if but one head of a family were employed to every 230 acres, there need not be a single pauper in the entire district; a proof," he adds, "**THAT NOTHING BUT EMPLOYMENT IS WANTING TO SET THIS COUNTRY TO RIGHTS!**" In which opinion we fully coincide.—*Westminster Review*.

* Poulett Scrope, a member of the British Parliament, has inserted in the London Morning Chronicle seven letters of Notes of a Tour in the United Kingdom, with a view to ascertain whether the labouring population be really redundant. His general conclusion is expressed in these terms:—"I have selected striking illustrations in support of the view I have always entertained, and which is at length obtaining very general acquiescence: namely, that the population of the United Kingdom is not really in excess; that the land is everywhere—even in the most seemingly over-peopled and pauperized districts of Ireland—amply capable of repaying the employment of additional labour to an indefinite extent, if only judicious use be made of it by those whom the law has intrusted with its ownership, and that the law itself be so modified as to encourage, instead of discouraging, improvement, to secure to industry its due reward, and to neglect and mismanagement its fitting punishment."

The notes on Ireland, afford a frightful picture of one of the many evils with which that country is afflicted:

"In Galway Union, recent accounts declared the number of poor evicted, and their homes levelled within the last two years, to equal the numbers in Kilrush—4,000 families and 20,000 human beings are said to have been here also thrown upon the road, houseless and homeless. I can readily believe the statement, for to me some parts of the country appeared like an enormous graveyard—the numerous gables of the unroofed dwellings seemed to be gigantic tombstones. They were, indeed, records of decay and death far more melancholy than the grave can show. Looking on them, the doubt rose in my mind, am I in a civilized country? Have we really a free constitution? Can such scenes be paralleled in Siberia or Caffraria?"

ratio of increase from 1830 to 1834 to be maintained, and see what would have been the result. By the year 1839 it would have reached 300,000, and five years after it would have exceeded a million, and the growth would every year have been more rapid, for the demand for labour would have increased faster than the supply.

Before this time, the flight from Great Britain and Ireland alone would have far exceeded half a million per annum, and what would be the effect of such a state of things may be conceived by those who read the following article which I take from the London *Times*.

The flight of a quarter of a million inhabitants of these islands to distant quarters of the world in 1847, was one of the most marvellous events in the annals of human migration. The miserable circumstances under which the majority left their homes, the element traversed in quest of a refuge, the thousands of miles over which the dreary pilgrimage was protracted, the fearful casualties of the voyage by shipwreck, by famine and by fever, constituted a fact which we believe to be entirely without precedent, and compared with which the irruption of the northern races into southern Europe became mere summer's excursions; but, perhaps the marvel of the event is surpassed this year. The impetus, or rather the combination of impelling causes, no longer exists. It might be supposed that so extensive a drain had exhausted the migratory elements of the nation.

It might also be expected that the countries which last year could not receive the fugitive masses without much difficulty and complaint, would have offered vehement protests against an immediate renewal of the hungry invasion. It is, nevertheless, the fact that the migration of this year is nearly equal to that of the last. The grand total from all the British ports for the first eleven months of last year was 244,251; for the first eleven months of this year, 220,053. Nor do these figures represent the whole truth of the case. They are merely the numbers of those who embarked at ports where there are government emigration officers, and who have passed under official review. Some thousands of the better class of emigrants are not included in the census. There can, therefore, be no doubt that in these two years more than half a million natives of these islands have fled to other shores.

The annual migration, it appears, is now approaching the annual increase of our population, which is vulgarly magnified into a thousand a day, but in fact is not more than about 290,000 in the year. Now, it is not to be imagined for a moment that Great Britain, at all events, has reached the limit of its population. The capital, the stock and the "plant" of the island are continually increasing and have lately increased more rapidly than ever. They also demand more and more hands for their further development. Under ordinary circumstances, therefore, we should be justified in dreading a migration which left the population stationary; and which, with a view to the growing trade and resources of the country, was rather a depopulation than anything else. At all events, the fact suggests that a spontaneous movement of so gigantic a character may well be left to itself, and requires no artificial stimulus. The matter certainly has come to that pass which makes caution the first duty of the state.

It is from Ireland that we draw our rough labour. The Celt—and we are bound to give him credit for it—is the hewer of wood and drawer of water to the Saxon. Can we spare that growing mine of untaught but teachable toil? *The great works of this country depend on cheap labour.* The movement now in progress bids fair to affect that condition of the national prosperity. The United States gain what we lose.

Protection is a measure of necessary defence against a system that tends to lessen everywhere the value of labour, and if applied effectually, the correction will be speedy, and thenceforward trade may everywhere be free. To those who doubt this, I would recommend an examination of the effects that would now result from the abolition of the tariff, and the substitution of free trade for the present imperfect protection. They could not but see that it would close every mill and furnace in the Union, cutting off a demand for 600,000 bales of cotton, and a supply of 700,000 tons of iron. Where then should we sell the one, or where buy the other? The labourer in factories and furnaces would then grow food, but the market abroad for food is

now almost closed*—or cotton, and the market for cotton is already ruined whenever the crop touches the point of two millions and a half of bales. Protection is right or wrong. Free trade is right or wrong. If protection is right, it should be complete and fixed, until no longer needed. If free trade is right, custom-houses should be abolished. Halfway measures are always wrong.

The direct effect of the maintenance of the present system, that of 1846, is to cause renewed efforts on the part of England for engrossing the market of this country, whereas a return to that of 1842, were it made with the approbation and consent of all parts of the Union, would be followed by results that would compel a change of policy. The direct effect of a thorough and complete change in our system would be, that of teaching the whole people of England that if they "expect to be prosperous and happy, they must seek those blessings in the steady pursuit of a British policy—in cultivating domestic resources—in protecting domestic interests—in drawing closely the bonds of concord, strengthened by the ties of mutual dependence among themselves, and abandoning the shadowy and delusive expectation of finding compensation in foreign commerce for the destruction of the springs of domestic consumption."

The harmony of all real interests among nations is perfect. The system of England is rotten and unsound—injurious to herself and to the world. It is the cause of pauperism and wretchedness at home and abroad, and the more effective the measures that may be adopted for the purpose of compelling its abandonment, the better will it be for her and for ourselves. The road to absolute freedom of trade lies through perfect protection.

* The present price of flour in England varies little from \$5. What is likely soon to be the price of pork, may be judged of from the following, which I take from the papers of the day.

A London letter, under date of Oct. 12, from a mercantile house extensively engaged in the trade, says: "We have the pleasure to hand you annexed our price current, in which you will see the comparative imports for the last three years; the present year showing an excess of 25,000 packages of American bacon more than the last. The general expectation with us is that prices must be very low the approaching season, from the increase of hogs in Ireland and Germany, and the very great production of hogs and all kinds of meat in this country more than usual. We incline to the opinion that should the same quantity and quality of American come to this market the next, as during the past season, one-half of it will have to be sold for soap purposes. You will have heard that our government contract for pork was taken at 10/ per cwt. less than last year, which we think is a pretty fair criterion of the market."

WOOL.—IMMIGRATION.

Interesting extracts from an Agricultural Address, delivered before the Agricultural Society of Lewis County, New York, on the 20th of September last. By the Hon. C. E. CLARKE, Member of the present House of Representatives. With an Introduction, and brief notes, by the editor of "The Plough, the Loom, and the Anvil."

IF, in Congress, nothing, or next to nothing, except the Report of the Hon. Hugh White of New York, last Session, that deserves the name of a national movement, has been done to indicate that agriculture has attracted the care and patronage of the government, in any proportion to its comparative importance; it is not because there are not many members of that body who understand the wants of that greatest of all branches of national industry, and who properly appreciate its paramount claims to attention. *Why is it then*, let us ask, that while for other and less useful interests and institutions, Departments are created, and so many millions expended; in respect of our *Agriculture* (with the prosperity of which all other industries are connected), the beginning and the end of patronage to it, should consist in the mere appointment of committees, some of which have never held a single meeting? And even these committees were not appointed, until a date comparatively recent, after the measure had been repeatedly urged, in the old American Farmer, by the humble pen which traces these lines.

No! The reason of this neglect of an industry which may be called the *back-bone* of the land, is not, we may be assured, because there are not many members of Congress alive to the obligation of making provision, as well for agricultural as for military surveys, schools and instruction. It is rather because the *farmers themselves are too inert*, and too much given up to the uses of the demagogues, by whom they are ridden; to assert their own rights, and to demand that a small portion of the tax they pay, for the enormous expenditures of the government, should go to the dissemination of that sort of knowledge, which would give us a better understanding of the science and principles of agricultural labour and machinery;—as well as for schools that instruct us in the scientific use of our military power and resources. It is hardly to be doubted that there is, from every State in this Union, among members who feel and own that they *represent planters and farmers*, those who are in every way well qualified, and well disposed to discern the rights of their constituents, to the principal care of the government; and its obligation to give precedence to the plough in all acts of legislation for the general welfare! Now the question arises, since they well enough know what is needed, and the wishes of those they represent (notwithstanding their apparent apathy), ought they not to volunteer in such a cause, to bring forward measures for its advancement? Why should it be esteemed more meritorious for individuals to volunteer in wars of aggression and conquest; than for representatives, whose duty it is, to step forward and seek to be the foremost in the work of creating abundance and prosperity at home?

At the call of societies, and on all festive occasions in honour of the plough, our great and public men are prompt to manifest the quickest and most honourable sensibility to the wants of agriculture, with a wonderfully extensive and practical familiarity with the means of its improvement. Who can read, without lively admiration and hope, the more deliberate and formal addresses, and the spontaneous and effervescent speeches called forth on these occasions,

from such men as Judge Woodbury, Col. Wilder,* Senator Pearce, General Chapman, Comptroller Whittlesey, Doctor Thompson, Holcomb, Davis, Bowie, Mr. Ingersoll, Mr. Webster, Mr. Everett, Mr. Winthrop, Mr. Upton, and many others of the intellectual elite of the land? Second only in his enviable character as friend and conservator of the internal harmony and industry of his country, the "Farmer of Ashland" is popularly known for his partiality for agriculture, and for his sagacious and provident notice and care when abroad, to introduce what seemed best calculated to push forward one of its most interesting features (to the west especially),—improvement in domestic animals. The same may be said of the great senator from Massachusetts. By both have all the best races of the most useful and improved animals been imported from England. The great senator from South Carolina, too, is well known throughout the country, as a remarkably successful cultivator of the soil generally, and of one of the most distinguishing and valuable staples at this day known in the world. It is notorious that he has carried into his agricultural industry and management, the same original, clear, and vigorous power of mind, combined with the same principles of economy and humanity, that have ever characterized his intellectual and social disposition and habits.

The invention we have heard ascribed to Mr. Calhoun, of the means of preventing, or essentially arresting, by peculiar and cautious expedients in cultivation, the rapid deterioration of southern plantations, to which they are particularly exposed from the topography of the country, the lightness of the soil, and the heaviness of sudden falls of rain; is in itself better fitted to confer solid distinction than all the chaplets ever won in fields of mere party warfare. In contemplation of all these auspicious signs for the plough, one is yet, nay, the more prompted to inquire, how it is that none of these gentlemen all powerful in talents, as many of them are in position, are seen to move for the adoption by the government, of all the means within its competency to diffuse throughout the country, among the rising generation, a knowledge of those principles of science and of mechanical philosophy and structures, by which labour, capital, and muscle, might be quite as much energized and economized in their application to the plough, as it is on all sides admitted they can be and have been, in their application by the government to the use of the cannon and the sword? Is not their inaction (we mean no personal application), to be attributed to the fact, that their constituents, the cultivators of the soil themselves, do not prompt them to move? Is it not, shame to say, because it is so much easier to agitate the people and their legislatures, about the affairs of foreign governments, and of States with which they have no legitimate concern, than it is to move them in relation to measures that bear directly on the industry and prosperity of every man, woman and child in the land!

We have here very briefly, and we hope not offensively glanced at some

* The Boston papers announce the election of Col. WILDER, as *President of the Senate of Massachusetts*, and, (what we should look for of course, knowing him as we do,) an appropriate speech from him in acknowledgment of the honour. By whatever other good titles, he may have gained that high distinction, high when we regard the character of the body and the State, we readily permit ourselves to infer, that his enlightened devotion and services to *Agriculture and Horticulture*, have contributed to procure for him laurels, that we are sure will be as well worn, as they have been deservedly won. It is but in the natural course and fitness of things, that those who prove themselves faithful and efficient in smaller, should be placed in larger, and yet larger spheres of responsibility and power. In military affairs, men have only to live, and rise by *force of law*. In civil life, it should be the care, as it is the interest of the people, that *merit* should not fail of *its* force to the same end.

of the ample reasons we have to know, that in Congress there is no deficiency, of zeal individually, or of knowledge, of the wants of agriculture—politically and practically—and we care, Heaven knows, for its political, only as that bears on its practical interests.

In our last number of “The Plough, the Loom, and the Anvil,” we gave some valuable papers on the subject of *peat* not only as a sanitary deodorizer of offensive malarias in cities, but as a fertilizer in itself and invaluable as a compound in the preparation of the richest of all manures. Among these papers was one of a highly instructive and practical character from the Hon. D. P. King, a member of Congress from Massachusetts. Since then we have been much gratified with the perusal of an address, referred to at the head of these remarks, delivered by another member of the same body. With most of the sentiments avowed in it, our own so nearly correspond, that we have asked leave to make a few extracts and to them have taken the liberty to append a few notes.

Here are, already, promising and pregnant signs of that advantage in the way of obtaining information from intercourse, afforded by a residence in Washington, with honourable members from all parts of the Union—information of a character to befit the pages of a journal, which it is our aim and chief pride, to make at once useful and *national*.

WOOL.

On the subject of wool Mr. Clarke remarked:—

“To every farmer, the rapid decrease in the price of wool, and of course in the number and value of sheep, is a subject of alarm and deep regret. Time was when the breeding of sheep and growing of wool was protected by adequate and wise laws and the business flourished.

“The destruction of that great agricultural interest is attributable to our own unwise laws. There is no meat so cheap, and at certain seasons of the year so healthy as mutton, no tallow so good or so easily grown as that of the sheep. There is no domestic animal that cleans and fertilizes the land on which it pastures so well and so fast.* None that will thrive on such rough and forbidding fields. There is hardly a shrub or plant but yields to the strong digestive powers of the sheep. There are many rough tracts of land now valuable that would become comparatively worthless if the growing of sheep were abandoned. Under the influence of bad laws this useful animal is rapidly decreasing, and year after year, fine wool that is intrinsically worth sixty cents, and which it has cost the farmer that much to grow, is sold

* “Sheep’s dung,” says Johnston, “is a rich dry manure, which ferments more readily than that of the cow, but less so than that of the horse. A specimen examined by Zierl consisted of

Water	68.0 per cent.
Animal and vegetable matter	19.3 “
Saline matter or ash	12.7 “

100.

“The food of the sheep,” he says, “is more finely masticated than that of the cow, and its dung contains a little less water, and is richer in nitrogen. When land is pastured by sheep, their manure is more evenly spread over the field, and at the same time trodden in, especially where they are employed to feed crops off of arable land.”

It has been by eating off their crops with sheep that the light soils of Norfolk, England, have been made to produce heavy crops of wheat and especially fine samples of barley.

The following table exhibits the average proportions of water, and of solid organic, and inorganic matters, which, according to Johnston, are contained in the urine of man,

for thirty cents.* Foreign wool, which under our unwise laws, is admitted into this country almost duty free, governs the market, and the wool grower of this region, where we are obliged to fodder half the year, and where we pay for a day's work a dollar, is obliged to compete with the foreign wool grower, who fodders only two months† in the year, and pays perhaps twenty cents a

and of our most useful domestic animals in their healthy state, and the average quantity voided by each in a day.

Urine of	Water in 1000 parts.	Solid matter in 1000 parts			Average quantity voided in 24 hours.
		Organic.	Inorganic.	Total.	
Man*	930 to 970	22 to 52	8 to 18	30 to 70	3 lbs.
Horse	886 to 940	27 to 79	33 to 45	60 to 124	3 ?
Cow	880 to 930	50 to 70	20 to 47	70 to 120	40†
Sheep	930 to 960	28 to 50	12 to 20	40 to 70	?
Pig	926 to 983	9 to 56	9 to 18	18 to 47	?

* The following were the prices which prevailed as quoted in the January number of "The Plough, the Loom, and the Anvil," from the Dry Goods Reporter, New York.

Saxony Fleece, extra fine . . .	42 a 48
Full blood, mixed . . .	38 a 40
$\frac{1}{2}$ and $\frac{3}{4}$ blood do . . .	33 a 36
Common and quarter blood . . .	30 a 32
No. 1 Wool City Pulled . . .	00 a 30
Do Country do . . .	00 a 32
Sup. Pulled Wool . . .	00 a 35

Edit. P. L. & A.

† The question has been raised, how far it may be expedient for the wool growers themselves to favour the admission of wool of a certain low grade at a low rate of duty, but it is to be apprehended that a door has been opened for frauds to creep in that even the closest doors and the thickest walls can hardly keep out. For a particular exhibit of the quantity and value of wool, imported into the United States from 1821 to 1849, the reader is referred to the last number of this journal, page 420. From 384,333 pounds of the value of \$93,829 in 1821, the importation for 1849 had gone up to 17,869,022 pounds, valued at \$1,177,347. This subject will continue to engage our particular attention, as will all the great branches of manufactures that are essentially connected with great branches of agriculture. He, in fact, who wishes to understand and promote the one, must look to the growth and prosperity of the other. They are not only harmonious but identical.—*Edit. P. L. & A.*

* Alfred Bequerell. See Thompson's Animal Chemistry, page 477. It is to be observed that the proportions of water and of solid matter in urine, vary with the food, and with a great variety of circumstances.

† A milk cow voids less than this in a proportion which varies with the quantity of milk she gives. Bouissaingault found a milk cow to yield daily 18 pounds of urine and 19 pounds of milk.

The best chapter within our knowledge on the proportion of manure to the quantity of fodder and the number of cattle, is to be found in that most valuable of all single volumes on agriculture, with which we are acquainted, the English copy of which sells when imported for \$10 and which we can give for \$2, "Von Thae's Principles of Agriculture." Thirty pages of our edition are given to this subject. He quotes a paper by a very talented agriculturist who makes the following statement of the proportion of manure furnished by different animals.

If the dung of an ox or cow amounts to . . .	180
That of a horse amounts to . . .	170
That of a sheep to . . .	19
And of a hog to . . .	18

Editor P. L. & A.

day for haying and harvesting.* The tariff is cunningly devised, it seems to give protection but in fact gives comparatively none. The foreign trade in wool is essentially free, and this great agricultural interest is thereby measurably destroyed. The duty upon imported wool is thirty per cent. on its foreign valuation. By various cunning devices this foreign valuation is mightily degraded. This is sometimes done by mixing dirt with the wool, sometimes a great manufacturing establishment sends its agent abroad to buy wool at such prices as he can, and then a second agent to buy of the first at some low price agreed on, so that most of the imported wool is represented at our Custom-house to have cost less than seven cents per pound, probably not over six. The tax upon a pound of wool which ought to be at least ten cents is reduced to less than two, and the protection is a mere mockery. It does not amount to over twenty-five dollars per annum on a flock of five-hundred sheep.

"Thus the American wool grower is obliged to work on equal terms with the Peon of Mexico, and the semi-savage of Africa, or abandon this most useful branch of agriculture. 'Tis not the wool grower alone that is injured, constrained to abandon his employment, he becomes a competitor with the grain grower or the dairy-man, and degrades the value of their productions by the well-known rules of supply and demand. Under this Tariff the quantity of wool used in the United States has increased, and the price of the wool has decreased, so much for a Tariff made nominally to protect farmers. If the agricultural interest should ever again be cursed by such protection as this, it is hoped that the law may receive its right name; a Tariff for the destruction of American Sheep. The Plough is of no party, and a tariff for protection of every branch of American industry is above all party, shame to an American statesman who uses a tariff for the protection of American industry as a hobby to ride on or as a target to fire at."†

IMMIGRATION.

On the subject of the immigration of foreigners, the gentleman discourses with sound sense and excellent taste. "The high price of labour," he says, "of which perhaps we are too apt to complain, is the necessary result of those natural laws which govern everything. We have a thousand things to do which the inhabitant of densely populated Europe finds done to his hand. There the forests are cleared off, the stumps are rotted out centuries ago, the bridge is built—the road and canal constructed—the school-house—the church—the public edifices—are erected, the swamp is drained, the stones are picked up and laid into wall, and the orchard is set and in full bearing. Here, on the contrary, everything remains to be done—the world is all before us, and no other people could encounter so bravely the great task of subduing a new world. To us and our enterprise, industry and ingenuity, this great work is entrusted, and full gallantly have we begun our task. If your population is too scanty—if

* What a hint to holders of large bodies of southern lands, in the mountains of Virginia, the Carolinas, Georgia, Texas, &c. But how vain to urge it. One man may lead a horse to drink but all the men in the world can't force him to drink when there.—*Edit. P. L. & A.*

† That this could be made good; but the fact is that the extension of sheep husbandry in the south has two difficulties to contend with. First liability to be killed by the dogs of worthless vagabonds who have no politics, and when you make appeal to the owners of flocks, every man of substance sufficient to own a flock of sheep, is unfortunately a partisan politician, who would sooner sacrifice his flock than endanger the ascendancy of his party, by measures that would restrict vagabonds from going at large with any number of vagabond dogs. The legislature of Maryland is in session. The liability of sheep to be destroyed by dogs, is universally admitted to be a crying evil—an immense loss to the State. We shall see what will be done to visit penalties on the owners of all such dogs—yes, *nous verrons!*—*Edit. P. L. & A.*

despite the thousand labour-saving machines which your ingenuity has invented, labour bears too high a price—call on the foreigner to come to your aid, to share your toils, to divide your labour, and enjoy your free and equal laws.* Receive him kindly—remember that his forefathers and yours were brethren, that your forefathers were once foreigners, and that time was, when the only ‘native American’ was a wild Indian. Let ignorance, prejudice and exclusiveness carp and criticize and find fault as they may. The immigrants coming from the teeming millions of Europe, are immeasurably the most valuable importations we make.†

“Let others visit the shores of benighted Africa and dispoil her of her children, and settle with their consciences a traffic in blood. Be ours the more humane duty of providing a home and employment and food and education and liberty—to the sons of our forefathers.”

FLAX CULTURE AND FLAXSEED.

Washington, 10th Feb. 1850.

To the Hon. C. E. Clarke.

DEAR SIR:—Some years since, on an equestrian excursion in your State, I remember to have seen, what seemed to me to be an unusually wide breadth of flax growing, and I was surprised at being told by the owner, that it was done with a view exclusively, *to the seed*; that no use was intended to be made of the fibre. This, with other circumstances, led me to suppose that the seed may be more extensively employed as food for domestic animals in New York, than in States with whose husbandry personal observation has made me more familiar. Your known fondness for agriculture prompts me to suppose, that you may possess information on that point; and as all English agricultural annals indicate that flaxseed, either in the form of cake, after the expression of the oil, or in substance in the form of jelly, is in great use and esteem there, particularly with a view to the value it imparts to the animal's excretions, I trust you will excuse me for inquiring for such practical facts on the subject, as may be within your knowledge, and particularly how flaxseed in any form is valued in comparison with Indian corn and other grains. The *national* spread and character of “The Plough, the Loom, and the Anvil,” which you so liberally patronize, makes it desirable to obtain for its patrons in each State, whatever there may be peculiar, practical, and worthy of being known and followed in others. In haste, but very respectfully,

Your obedient servant,
J. S. SKINNER.

HOUSE OF REPRESENTATIVES, 11th February, 1850.

DEAR SIR:—When wheat was 75 cents, corn 37½ cents, barley 31 cents, and oats 18 cents per bushel, it was thought to be good economy to raise flax for the seed alone, but the seed was not extensively used for feed; it was, and is generally sent to the oil mill, where it always is worth \$1 and often \$1.25 per bushel; ten bushels per acre is a common yield. When it is cultivated for seed alone it is sowed very thin, and the stem is cradled (not pulled). Flax is often sowed with barley, and of course harvested and threshed with it, and when the grain is winnowed, the flaxseed is found in the box of the fanning mill. Thus, without much extra labour, and without much diminution of the crop of barley, eight bushels per acre of flaxseed are added to the crop.

There is a larger kind of flax than that in ordinary use. The stem is longer and coarser, and the seed is larger. The oil makers, with the view of increasing the quantity and improving the quality of the seed, introduced this kind of flax into Jefferson and Lewis counties, from Long Island; the Long Islanders imported it. Mr. Robbins, of Lewis county, used the flaxseed for feed, and insisted that there was more nutriment in the crop acre for acre than in the crop of corn, stalks and all. His mode of using it was

* A country like ours can never be injured by the high price of labour. With high prices the *power to consume* advances, and with that wealth and population advance, and with them education and power, and the love of the peace and respect for justice. —*Edit. P. L. & A.*

† A great truth, and none the less so that it is not universally seen or admitted. The number of immigrants to a country, constitutes at once the best sign and the best promoter of its prosperity. To elaborate this position is one of the aims of this journal. —*Edit. P. L. & A.*

to put a small quantity in water and boil it, and a thick and very nutritious mucilage was obtained most useful for horses, horned cattle, and sheep. Swine will thrive on it, but it does not make good pork.

I think that American oil cake, is worth by the pound, a quarter more for horned cattle and sheep than corn meal.

We do not press out as much oil as the English. The English often grind up and press over again American oil cake, if it arrives in good order, that is, not musty or mouldy, and hence it is, that thin oil cakes command a higher price than thick, because they are usually in better order.

The best way to use oil cake is to sprinkle it on chaff, cut straw, or ground cobs. Independent of its nutritious qualities, it is a very healthy aperient, and has a direct influence on the skin and hair of the animal that feeds on it.

I write without ceremony, and hope my want of time may form an excuse for imperfection in matter and manner.

C. E. C.

To J. S. SKINNER,

Editor of "The Plough, the Loom, and the Anvil"—Washington.

It will be seen by the reader, that in his very prompt and obliging reply, Mr. Clarke does not advert to the additional value imparted by the flaxseed, or its oil, to the animal manure. But all English authorities abound in references to its importance in that respect. The English farmer, paying a high price for oil cake—there generally called "cake"—is satisfied if he can get back *half* his outlay, in what it contributes to the animal; looking for the residue, to the additional value of the manure. We must here content ourselves with one extract from a work to which we shall be indebted for many facts illustrative of the value and permanency of various manures, as oil cake, guano, lime, bones, &c.; founded on the assured experience of men who we may believe pay close attention to these matters, seeing that they pay *rent* per annum, more than the average fee simple value of lands in many States of the Union.

The work to which we refer, is the evidence of many of the most experienced and intelligent farmers in England, before the "Agricultural Customs Committee." The reader will hardly require to be told, that in the language of English agriculture, "seeds" refers to grass crops of various kinds, as distinguished from grain, and roots, and hay.

The name of the witness ought to have appeared at one end or the other of his evidence.

"Is it generally considered that the expenditure for cake does not remunerate the farmer, so far as the improvement of the stock goes which consumes that cake? No; if we get half the benefit of the cake in the stock we are very well satisfied.

"You consider that if the beast is improved to the extent of half the value of the cake which he eats, you have done well? Yes.

"Do you reckon the straw for anything, that you have given the beasts? No.

"It is the practice, is not it, with many Lincolnshire farmers to keep beasts in the straw yard during the winter, eating straw and cake? Yes, to consume the straw to make manure; and unless the beasts had cake they would be reduced in value by living entirely upon the straw.

"And the manure would be worth less? Of course the manure would be worth a great deal less.

"In grazing farms with no arable land, and consequently no straw, which would be the value to the succeeding tenant of the quantity of oil-cake given to bullocks; what would be your opinion under such a state of things as that, of the value to the succeeding tenant? Equally as much, or probably rather more.

"With no straw to make any dung? Of course the dung that the cattle make, by having hay, would make better dung.

"Supposing the manure that we see in cow-houses and those places, made without straw, put out into the weather, how much of that would remain for the incoming tenant? I should think it would be in about the same proportion.

"Have you seen that state of things? No; I generally mix my manure altogether.

"Is not the quantity and quality of dung very small by having no straw mixed with it; do you think the improved quality would make it equal to the larger quantity produced by having straw mixed with it? Yes, I think it would.

"What is the average quantity which you would consider a fair average? For beasts of two or three years old it would be 50s. worth of cake, at the price it is now.

"For how many beasts? That depends upon the quantity of land.

"Taking your quantity to be 250 acres of turnips, and as you farm under this four-course system, of course you would have 250 acres of each sort? I have as many as 150 head of beasts.

"All forward cattle? No; some are out at grass.

"The forward beasts for the next year would be in the yard with cake? Yes.

"Do you winter the whole of your beasts yourself? Yes.

"Do you ever take in any beasts of other people? No.

"Is not that a common practice? Yes.

"Is it the practice that gentlemen having marsh land, so that they cannot find straw enough, give a certain portion of cake on another man's premises, he finding the straw gratuitously? Yes; the straw is generally given, and the attendance to the cattle.

"The owners of the beasts giving how much cake per head? Giving them perhaps 2 lbs., or 3 lbs., or 4 lbs., according to the size of the cattle. I have known as much as 4 lbs.; many of the Wold farms have no grass land; they have to buy cattle to eat the straw, or take in cattle being sent with them.

"Have you no grazing land to keep beasts? I generally sell my fresh beasts in the spring.

"Have you not heard of an agreement being made, that a man should send his cattle into the Lincolnshire tenant's yard, and that the tenant should not only find the straw, but pay for a portion of the cake eaten by the other man's beasts? Yes, I have heard of that.

"To increase the value of the manure? Yes.

"You have been asked with regard to the value of the oil-cake, when given alone to cattle and sheep; did you ever know cattle and sheep feed alone on that, without hay or straw? No.

"Do you think they could? No, I think not.

"As to the mode of feeding beasts by cake; you stated that cattle are fed in the yard with straw and oil-cake during the winter? Yes.

"And that with that oil-cake there is that other mixture which makes the mixed manure more valuable? Yes.

"How do you feed your sheep during the winter and the spring? We give the sheep cake when they are upon turnips in the winter, and we give them cake when they are upon seeds in the summer."

ON THE CULTURE AND PREPARATION OF FLAX AND THE USE OF FLAXSEED.

CIRCUMSTANCES may occur, if they do not now exist, under which it may be expedient to cultivate *Flax*, as a remunerative crop in many of the States; and under all circumstances it is desirable to possess a knowledge of the opinions and experience of a people most conversant with the subject. Hence, it is deemed proper to preserve for those whom it may now or hereafter concern, the following exposition which was made at a "*Discussion on Flax Culture, at a late meeting of the Hereford Farmers' Club*" in England.

The information here presented seems to have been compiled for a school catechism for Irish children, and to have been corrected by a practical man. Altogether, it is well fitted to convey instruction to the practical cultivator, as well as knowledge which every reader may be pleased to possess. It will be seen to treat, not only of the cultivation, but of the preparation of the plant for manufacture, and of the various uses to which the seed may be applied. It appeared in the course of this discussion, that Mr. Day had grown 20 bushels of seed per acre, and did not consider flax "an exhausting crop;" while a Mr. Browne had 103 bushels of flaxseed off 4 acres, or $25\frac{3}{4}$ bushels to the acre, and did not find it "an exhausting crop." This, at the current price, 6s. 6d. per bushel (\$1.56), is 8l. 5s. 9d., or more than \$40, said to be a sum sufficient to pay rent, taxes, ploughing, pulling seed, steeping, and scutching the crop.

"As a consequence, the Flax fibre produced, taking it at Mr. M'Cullagh and Captain Larcom's average of Irish produce, 45 stones per acre, at 7s. per stone, would be value

for 15l. 15s., as net profit per acre. Those authorities average the Flax crop in Ireland at 15l. per acre, not including the seed."

The general impression is, however, that *Flax* is a very exhausting crop; but that depends on circumstances, as explained by Dr. Kane, in his "Industrial Resources of Ireland," a work to which every liberal-minded agriculturist ought to treat himself for general as well as practical information. Mr. John Travers, of New Jersey, an enlightened manufacturer, and gentleman of very general information, is familiar with the difficulties and the wants of this country as to flax culture. He has, we believe, through the "American Institute," offered a premium to promote improvement in flax culture in some way. Can any one tell what has been the result? We should be glad to hear from him, the state, and the wants of this branch of husbandry and of manufacture in the United States. But alas! "you may call spirits from the vasty deep—but will they come when you call?"

Flax, its Culture and Manufacture.—Although flax is easy of growth, its quality depends very much on soil and fitness of situation. Low grounds, and those which have received deposits left by the occasional overflowing of rivers, or where water is found not very far from the surface, are deemed the most favourable situations for its culture. It is attributed to this last circumstance that Zealand produces the finest flax in Holland. Preparatory to the cultivation of this plant, it is necessary that the ground should be very deeply furrowed by the plough, and it should be reduced to a fine friable mould, by the repeated use of the harrow; $2\frac{1}{2}$ or $2\frac{3}{4}$ bushels of seed are required for every acre of ground, and scattered broadcast. Care is taken to distribute the seed evenly, and the earth is then raked or lightly harrowed over. When flax is raised to be manufactured into cambric and fine lawn, the quantity of seed sown in the same space of ground should be 3 bushels, the plants growing near each other having a greater tendency to shoot up in long slender stalks; and, as the same number of fibres are usually found on each plant, these will of course be finer in proportion. When the crop grows short and branchy, it is esteemed more valuable for seed than for its fibrous bark, and then it is not gathered till the seeds are at full maturity. But if the stalks grow straight and long, then all care of the seed becomes a secondary consideration, and the flax is pulled at the most favourable period for obtaining good fibres. Experience has shown that when the bloom has just fallen, when the stalks begin to turn yellow, and before the leaves fall, the fibres are softer and stronger than if left standing until the seed is quite matured. It has been found from experience that *most seeds*, though not quite matured when gathered, ripen sufficiently after being pulled, provided they be not detached until dry from the parent plant, all the sap which this seed contains contributing towards further nourishing and perfecting the seed.

Is flax in general a remunerative crop in Ireland? Yes, when properly managed, it is not only highly remunerative to the farmer, but is of immense value as affording profitable employment to the poor in his neighbourhood.—To how many individuals would an acre of flax give constant employment for 12 months? If converted into cambric it would afford employment to 70; and if into embroidered lace, to 100.—Is flax grown on an extensive scale in England? No; its culture is much disregarded by British husbandmen, though it is stated that five millions of money are annually sent to foreign farmers for the purchase of foreign flax, and nearly three more for oil and seed.—Ought not this to encourage us to cultivate it more abundantly than we do? Yes, as we know we should never fail of finding ready markets and fair remunerative prices at Leeds, Manchester, Preston, and Liverpool, as well as in Belfast, where there are above 20 flax spinning mills; but at present we have not sufficient to supply our merchants, who are affording every encouragement to Irish flax growers and weavers.—Have they not for this purpose formed themselves into a society, in connection with many noblemen and gentlemen interested in the welfare of the Irish people? Yes; the society is called the

Belfast Flax Improvement Society, and it has already proved a great blessing, particularly to the industrious inhabitants of the north of Ireland.—What is the flax crop generally called in the north of Ireland? The rent-paying crop; because its cultivators are enabled by the profits to pay their rents without selling their corn crop.—Is it necessary that women should understand the proper cultivation and management of the flax crop? Yes, it is particularly so, and that children should also be made acquainted with it; because much of the care and attention necessary to bring it to perfection, both while growing, and after it is pulled, rests with them.—I should then wish you to tell me in what month or months the seed should be sown? The best time for sowing is from the last week in March to the middle of April. This is called early seed; the late is sown the beginning of May, and is called in the west of Ireland the seed plant, because the fibres are generally coarse, but the seed large and fat; this is from its being sown thin, about 2 bushels per acre.—Are the fibres of the flax injured by allowing the seed to ripen? Yes; if the flax be not pulled until the seed ripen, it becomes brittle and dry, from the effect of the sun, as the heat draws up the oil from the stem, and the greater part of the oil or juice becomes lodged in the seed, and, as a consequence, the flax cannot be oily as it should be to possess good spinning qualities.—What is the usual value of the seed of an acre of flax? Between 7*l.* and 8*l.* sterling.—What description of land is best suited to the growth of this plant? Deep friable loam, containing a large quantity of vegetable matter, mingled with sand. It should be freed of all weeds, and harrowed and rolled, until the surface looks like a well raked garden.—How is the flax seed sown? Always broadcast, never in drills, as the fibre would be valueless if so sown.—How much seed would an acre of ground require? If it is intended that the fibres should be fine, $2\frac{1}{2}$ to $2\frac{3}{4}$ bushels are necessary, if not, 3 bushels; but if the object be to obtain a large quantity of seed, 2 bushels to the acre will be sufficient, as it will branch off in the top, and produce more than if thickly sown.—Is it necessary to keep the ground free from weeds while the plant is growing? All the larger weeds must be carefully removed, but the low growing ones, which the flax plant readily overtops, are of no consequence, and much injury is often done by attempting to pull them up.—How do we know when flax is ripe? We know that the plant is sufficiently ripe for the purpose of the spinner, and the seed for the oil-presser, when the stalk becomes yellow at the bottom, and the leaves begin to drop off; but if the seed is particularly required, in order to raise new crops, a small portion should be allowed to acquire full maturity, just what may be requisite for sowing purposes.—How do we ascertain when it has reached this state? By the bright brown color of the seeds, and the yellow shade of the whole stem.—Should flax growers always save the seed of their crops? Except when the fibres are required for the manufacture of fine lawn or lace; in that case the plants must be removed from the ground when quite green; but in every other, the seed may be allowed to ripen as stated above. How is a flax crop removed from the ground? It is pulled by handfuls in fine weather by women and children, and laid in small bundles, crossing each other obliquely, on the ground. When pulled (or at least all that is sufficiently ripe, for sometimes one part of a field ripens much sooner than another), these small bundles are collected into larger ones, and being tied near the seed end, are placed upright on the ground, with the roots downwards, in such a manner that the air may have free course through them.—Is it necessary to use any particular care in pulling flax? Yes; the plants should be caught near the bolls, which allows all the short stalks to escape, these are pulled afterwards, and made up into separate bundles.—How long should flax be allowed to remain in standing bundles or wind rows? Not more than two days, particularly if the weather is either very warm or very bright.—What is the flax manufacturer's next duty? To ripple through a sort of comb, which will not admit the capsule to pass. This comb is called a "ripple." See Dickson's rippling machines.—Is the seed of any worth or use, supposing it not sufficiently ripened for the purpose of raising new crops? Yes; it is of much value, as affording that description of oil so necessary to house painters, and with which we are all acquainted, under the name of "Linseed oil." The husk which remains after the process of expressing this oil has been completed is made into cake, and is sold for fattening cattle, while the inferior seed which has been rejected by the oil manufacturer, is made into flaxseed jelly.—What is flaxseed jelly? It is a nutritious food given to young cattle, and is thus prepared—1 quart of seed is steeped in 3 quarts of water for 48 hours, afterwards 3 quarts more are added, and the whole is boiled gently for two hours; when cool, it is mixed with oat or barley-meal, or bran, and given to the animals.—Suppose, however, that we neither wish to express oil from the seed, nor to feed the cattle with it, nor yet to save it for the purpose of raising new crops, is there still a necessity for rippling the plants? Yes; in order that the next process, which is water retting, may be performed without injury to the fibre.—How is it possible that by placing the seed in steep with the plants, we cause injury to the fibre? Because the seed is more readily acted on by the water than the stalks, consequently fermentation

sets in too rapidly, the water becomes putrid before the fibres are even partially disengaged from the glutinous substance which causes their adhesion; and when at length they are sufficiently freed from it to admit of their being removed from the steep, they are found to have assumed a yellowish-brown colour, and to possess little or no tenacity or strength.—Is the process of water-retting necessary? Yes. It is in order to facilitate the separation of the fibres from the bark, which can only be accomplished by water-retting, or by submitting the plants for a long period to the dew, the air, and the rain. This latter method is called dew retting, and is very little practiced, except in Dorsetshire and Somersetshire, where they grow flax more for the seed than for fine fibre, as they are not aware of the method of producing fine fibre.—Is water-retting an important process? Yes, it is most important; and yet it is often most negligently performed in Ireland. The Dutch call the knowledge of it “science,” and teach it by means of seven rules.—Then with them it must be a work of great labour, encumbered with difficulties; is it not so? No, it is quite the contrary; for their rules are so simple that any young person may understand and practice every one of them.—Which is the first rule? The first is to prepare, at least a fortnight before the flax has been pulled, two ponds of soft, clear, standing water, perfectly free from all mineral impurities, and from springs at the bottom or sides.—How are such ponds to be obtained? By forming canals and pits near a stream or river, and avoiding the near neighbourhood of springs, which are usually impregnated with iron and other mineral substances, and therefore cause stains or stripes in the flax.—Name the second rule. Carefully to remove all the bolls from the stalks.—What is the third? To see that the flax is made up in small bundles.—What is the fourth? To sort the bundles according to the length of the stalks, in order that the short ones may not be over-retted by being placed in the same pond with those of more mature growth.—What is the fifth rule? To lay carefully, in straight and regular layers, the long bundles in one pond, and the short ones in another.—What is the sixth? To cover the ponds with sods of soft peat moss and plank, so as to keep the flax from rising to the surface, and also to exclude from it as much as possible air and light.—Name the seventh. To watch carefully the subsidence of fermentation, which generally occurs about the tenth or twelfth day, and afterwards to examine the plants three or four times daily, in order to discover as soon as possible when the textile filaments are easily separable from the boon, or woody parts. The moment they are found to be so, the flax should be removed, as a few hours’ over-retting often destroys the strength of the fibre.—Is water-retting complete when the flax is removed from the pond? Yes; and then the next process, which is that of grassing, succeeds.—How is flax grassed? By spreading it as thinly as possible, in perfectly straight lengths, on clean lea or newly mown meadow. It should be spread as soon as taken out of the water, unless there is very heavy rain falling; light rain will not injure it.—How many days does the process of grassing occupy? Generally five or six days. If found to be perfectly dry in that time, and the fibres spring from the wood like a bow and string, it should be carefully gathered into bundles, kept all straight, and brought to the break.—What is a break? See Dickson’s portable mill for breaking and scutching Flax, 35 and 36 Skinner Street, Bishopsgate, London.—What is the next operation? That of scutching, which is accomplished by placing the broken flax in small handfuls over what is termed the scutching stalk, the man who operates holding one end of the handfuls (which is called a streak), whilst the other end or half the streak is so beat by the rapid motion of the scutching swords, or handles in the mill, until the fibres are altogether cleansed from the hull, or wood, on which they are produced. By the mill process of scutching or dressing, a man can clean from 5 to 6 stones, or 70 to 80 lbs. per day, whilst a man cannot clean by the old system of scutching by hand, more flax than from 10 to 12 lbs. per day; and flax that would sell from 7s. per stone, when scutched by the mill, would not sell for more than 5s. 9d., to 6s. per stone, if scutched by hand. See Belfast market note; for the process of breaking and scutching flax, see Dickson’s portable mills at work on the farms of T. P. Browne, Esq., Salperton, Andoversford, Gloucestershire, and T. H. S. Sotherton, Esq., M. P., Devizes.—The greater portion of the above statement on “Flax, its Culture and Manufacture,” has been compiled and arranged, as a catechism for the children of the Irish peasantry, by a Mrs. Mooney: but like all works collected from theoretical writings, many errors were set forth, and I found considerable alterations and corrections necessary to be made, to prevent disappointment to those that may look to such as a guide in cultivating the plant.

Having described the advantage of machinery to dress or scutch Flax, compared with hand labour, and having asserted that mill-scutched flax will sell from 20 to 25 per cent. higher than hand-scutched flax, a few observations on the cause may be useful. The flax fibre being, like our straw, of a tubular form, contains a portion of oil, which the quick revolutions of the scutching swords or handles when driven by machinery, bring out, and not only makes the flax more soft and appear to the eye superior to similar

flax when scutched by the hand, but the oily matter being, from the heat created by friction, completely disseminated through the handful or streak then in course of scutching, makes the fibres all adhesive and damp alike, which, when thrown over the hackle to prepare it for spinning, splits into many cobweb-like fibres, and it is then only that its value is known and appreciated by the spinner. The dressing or scutching by hand cannot be done so as to bring out this oily matter, as the slow stroke of the arm must ever fail to create friction, and, as a consequence, hand-dressed flax is husky and dry, and will not split on the hackle, but will fly off the teeth from being dry and open, and will run to waste. This is so well known in the north of Ireland, that many follow the trade of purchasing hand-scutched flax in Ballyhay and other markets, and, after having it redressed in the scutching mills, sell it very frequently at 1s. to 1s. 6d. per stone profit. As these are facts that Mr. Rowan is likely to be aware of, from his visit to Belfast, it might be worth the consideration of those who have corn mills in Herefordshire to erect machinery for the purpose of scutching flax, as such would encourage the growth of the plant and be found remunerative; the same power may be made to answer for scutching flax when grinding corn can be dispensed with, and as the prices of flax, from the Belfast *Northern Whig*, of the 20th ult., will prove my assertion, I beg to hand the market note of that date. "Flax: The markets are pretty well supplied, with a fair demand at our quotations. Hand-scutched, inferior, per 16 lbs., 4s. 4d. to 4s. 7d.; middling, 4s. 9d. to 5s. 3d.; fine, 5s. 4d. to 6s. Mill-scutched, low quality, 5s. 3d. to 5s. 9d.; middling, 6s. to 6s. 9d.; best ditto, 7s. to 7s. 9d.; fine, 8s. to 8s. 9d." As Mr. Rowan alluded to "exaggerated statements as likely to have a tendency to destroy the prospects of those that may be induced to cultivate the plant, by a less profit being yielded, than they had been taught to expect," I beg, in conclusion, to say that I quite agree with him on that point, at the same time I consider that when scientific growers make a hit, such as I shall draw attention to, the fact should be made known, that others who have the same opportunity may go and do likewise.

Extraordinary Produce.—Extract from the *Armagh Guardian*. At our market on last Tuesday, Mr. George Lester, of Bellarra, disposed of 67 stones of flax, the produce of one band of Riga seed; the flax was prepared at Mr. George Henry's mills, and realized its owner the handsome sum of 32l. 3s. 6d., having been sold at 10s. 6d. per stone. This and similar facts should stimulate the farmers to pay more attention to so profitable a crop. I will suffer the disgrace of being found in error, if I cannot bring forward a dozen such growers as Mr. George Lester.—*J. Hill Dickson, Phoenix Hotel, D'Olier street, Dublin, Nov. 2.*

LINSEED OIL MILLS.

THE following will come in here appropriately. It is one of a series of valuable papers, from the "*Cincinnati Price Current*," on *Western Manufactures*; more of which we hope to have the pleasure to publish.

LINSEED OIL MILLS.

The business of manufacturing linseed oil in the west, is one which has increased considerably within a few years; but it cannot be said to have prospered in equal proportion. English oil has ever successfully competed with American in the eastern markets, and profitable shipments have been seldom made from the west: indeed, prices generally have been as high, and, not unfrequently, higher, in Cincinnati than in New York. But the consumption in the west has steadily increased, so that now she has within herself a market for the quantity produced: but the latter might be greatly increased, without adding to the number of mills, as each has a capacity for making a much greater quantity than is annually turned out. There is still another difficulty that western, and, we may say, American manufacturers have had to contend with, viz.: the difficulty of procuring seed. The farmers have, heretofore, made little or no use of the lint or flax, and the seed, alone, has been considered an unprofitable crop; and every effort on the part of manufacturers to induce its cultivation proved in only a small degree successful. There is a prospect now, however, that this difficulty will be removed, by the creation of a market for the lint or flax. Within the last few months, an establishment

has been erected, on the Miami Canal, near Dayton, for the purpose of manufacturing the lint into coarse linen, such as crash, burlaps, &c., in which operations have already been commenced. This, to be sure, is but as "a drop in the bucket" in comparison with the supplies of the raw material that would seek a market, if one was to be found; but we think this little manufactory, "solitary and alone" though it is, may be regarded as the beginning of a great business, that will supply, to a great extent, the home demand for every description of linen goods. There is within ourselves the material (and who will deny that we have the enterprise?) to commence and carry on successfully, this, as well as any other branch of manufactures. We must, though wandering somewhat from our subject, present a few statistics, to show what a large amount of money is annually paid to foreign countries for linseed oil and linen goods. During the year, ending June 30, 1848, there were imported into the United States, of the manufactures of flax as follows:—

Linens, bleached or unbleached	\$6,012,197
Hosiery, and articles made on frames	1,998
Articles, tamboured or embroidered	21,018
Not specified	589,435
Total	\$6,624,648

The amount and value of linseed oil imported, during the same period, were as follows:—

Where from.	Gallons.	Value.
Hanse Towns	4,314	2,216
Holland	9,966	5,618
Belgium	35,447	16,777
England	986,241	459,407
British America	43	23
Sweden and Norway	100	60
Total	1,036,111	\$484,101

Thus it is seen that the value, *ad valorem*, of the manufacturers of flax and linseed oil, imported into the United States, was, in one year, \$7,108,749.

But we must return to our subject. The farmers, as soon as they find a market for the lint, will give more attention to its cultivation, and thereby increase the quantity of seed; the result of which will be a reduction in prices that will enable American manufacturers to compete more successfully with those of foreign countries, and, ultimately, drive the latter entirely out of the market.

The demand for, and price of oil cake is also greatly in favour of Europe. The price of this article, in Liverpool, is usually about £7 sterling per ton; while here the average price has not been over \$10 per ton. There is, however, a home demand springing up for this article, in the more thickly settled portions of the eastern States; and there is a fair prospect that this demand will steadily increase, until our manufacturers will in this respect, also, have advantages that they do not now enjoy.

There are in the whole west 12 mills; as follows:—

Cincinnati 4	Zanesville 1
Dayton 3	Springfield 1
Piqua 1	St. Louis 1
Madison 1	

The actual production of these mills, as previously intimated, falls considerably short of their capacity for manufacturing. The Cincinnati mills consumed, during the last year, 93,000 bushels of seed, and produced 186,000 gallons of oil, and 2,000 tons of cake. These mills have the capacity for

pressing 347,500 bushels of seed per year, which would produce about 600,000 gallons of oil.

The three mills in Dayton consumed, last year, 100,000 bushels of seed, produced 200,000 gallons of oil and 2250 tons of oil cake. These mills are now capable of crushing 200,000 bushels of seed, annually, and producing from 375,000 to 400,000 gallons of oil, and 2400 tons of cake.

The mill in Springfield, Ohio, consumed, during the year, 11,000 bushels of seed, and made 23,000 gallons of oil.

The St. Louis mill crushed 25,000 bushels of seed, and produced 49,500 gallons of oil.

The mills in Zanesville, Madison, and Piqua are small, and do not consume, together, over 30,000 bushels per year. We will here give, in tabular form, a recapitulation of the productions of the several mills:—

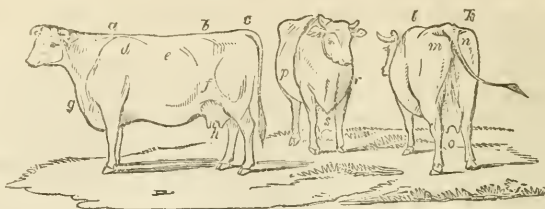
	Bushels Seed.	Gallons Oil.	Tons Cake.
Cincinnati	93,000	186,000	2,000
Dayton	100,000	200,000	2,250
Springfield	11,000	23,000	223
St. Louis	25,000	49,500	562
Zanesville, Madison, and Piqua	30,000	60,000	660
Total	259,000	518,500	5,695

The production of the current year, owing to a deficiency of seed, will fall considerably short of the above amount. We have letters from the proprietors of all the mills in Dayton, and some of them do not expect to get over one-half the amount of seed consumed last year. The consequence is, the prices of seed and oil are now higher than last year, and must so continue, until the next crop of seed reaches market. The average price of seed in this market, last year, was 108c. per bushel; this year it will average 125c. The average price of oil, last year, was 54½c. per gallon; this year it will be 65c.

The oil manufactured in Dayton is sold principally in this market. Some lots are shipped to Toledo, Detroit, Cleveland, Buffalo, New York, and Boston. The cake has been mostly sold for the European market, until this season, when a considerable quantity of that made at Dayton and Cincinnati was disposed of to oil manufacturers at Troy, N. Y., and Trenton, N. J., by whom it was ground and sold for feed.

The Dayton mills are owned by W. & F. C. Estabrook, Parrott & Clegg, and F. Gebhart & Co.; Cincinnati, Guthrie & Co., N. C. McLean, J. Elstner and E. Davis; St. Louis, H. T. Blow; Springfield, Smith & Boucher.

Labourers' Cottages.—The Royal English Agricultural Society has lately given a prize of 50*l.* to Mr. Goddard, architect in Lincoln, for the plan and cost of construction of a pair of cottages for agricultural labourers. The ground floor contains only one living room and a scullery, with a pantry and cellar. The author reckons one living room to be most consonant to the “wants and means” of the labourer, and for preventing any letting off for the accommodation of lodgers or another family. The means of labourers are small enough in all conscience, but his wants are those of common humanity. Mr. Goddard’s plan improves nothing upon the pinfold rooms of Tweedside and Northumberland, where a family of a number of ages and sexes, being huddled together, forms a blot of no small magnitude on the social system of those celebrated counties.



SCHLESWIG AND HOLSTEIN DAIRY MANAGEMENT.

I SHALL be glad if you will allow the accompanying description of the routine of management of an Holstein dairy to appear in your *Gazette*, to give the English dairymen an idea of the exertions made by foreigners to compete with them in the London market.

The pride and boast of the Holsteiner is his dairy; and as Holstein butter may well claim to be the best in the world, the following sketch of the management by which the dairy in that country is more especially distinguished, may not prove uninteresting nor useless to the English farmer.

A dairy consisting of 200 cows gives employment to the following number of persons; a dairy-man, a dairy-maid, a cook, a cooper, two cow-herds, an odd man, a cheese-maid, and ten dairy-girls. The dairyman's duty involves a general charge of the cattle, the calves, and the swine; he is responsible for their being regularly and suitably fed; that the cow-herds do their duty; that hours of milking, &c., are punctually adhered to; and that everything and every person is in proper place and keeping. He must pay strict attention that the cows are milked thoroughly out, on which so much depends. The dairymaid has the superintendence of every work which belongs to the treatment of milk, butter, and cheese, from the moment that the milk is brought to the dairy room, and is answerable for the cleanliness of the whole dairy house; she is also housekeeper, and orders the extra work for the girls not included in the dairy, as gardening in summer, and spinning in winter. Her own particular work in the dairy is to skim the milk, to manage the process of converting the cream into butter, to beat the butter as will be afterwards described, to superintend the cheese making, to put in the proper quantity of rennet and salt, and to look after the cleanliness of the dairy utensils. The cheese-maid attends to the manipulation of cheese making, and has to measure the fresh milk as it is put into the tubs, to clean out the dairy room, and to rub dry and turn the cheeses. The ten dairy girls have each to milk from 16 to 18 cows, to do all the work in cleaning the dairy utensils and the dairy house, and either to spin or work in the garden, or any other work which is ordered by the dairy-maid. The cooper repairs and renews the dairy utensils, and makes the casks to contain the butter for sale; he assists at the milking, and takes the duties of the dairy-man, in case of illness, as far as the care of the cows and pigs. The odd man milks his number of cows, feeds the pigs, and carries the skim milk out of the dairy room into the cheese tub. When the cows are in the stables, these two last persons assist the dairy-man, with the help of the cow-herds, to give the hay and corn to the cows. One cow-herd is kept for each 100 cows, their duty being to watch the cows as long as they are in pastures, and to collect them together at the milking times. In the winter, when the cows are housed, they have to give them straw and water, and to make up the beds four times a day, so that the cows always have clean straw to lie down upon. The dung is removed by a man whose time is fully occupied by that particular duty.

The routine of dairy work is regulated to follow in 12 hours, to leave ex-

actly the space of time between each operation with the milk, cream, and butter. The morning work commences in summer at two o'clock, by the establishment being called by the girl whose duty for the week has been to remain up the night, preparing the hot water required for the first operations. On entering the dairy room, the dairy-maid, with the assistance of the cheese-maid and two of the handiest of the girls, skims the milk, which has stood in the tubs 36 hours; it is carried by the odd man into the cheese tub; the milk tubs, as they are emptied, are washed and cleaned in the following manner. The tubs, made of oak wood, painted red inside, are placed upon the floor of the ante-cellar, and the girls are divided into two parties, so that two tubs at a time are undergoing the same process of cleaning. The first girl puts a ladle of boiling water into each of two tubs; next two girls follow with small birch scrubbers, to remove the particles of adhering cream or milk, which is emptied in a pail for the pigs; the fourth and fifth girls, with boiling water and a hard round brush made of pigs' bristles, with which every hair's breadth is thoroughly scrubbed and polished, to remove all acidity. The sixth and seventh girls wash the outsides and bottoms of the tubs with cold water, and dash the insides well with cold water. The eighth girl gives them the final washing in a cold bath, and places them on a heap, when they are examined by the dairy-maid, and put out in the air to dry. During the time the dairy-maid is examining the tubs, the cheese-maid washes the floor in the milk cellar upon which the tubs stood. As soon as the girls have finished the cleaning of the tubs, they carry the skimmed milk which has been heated into the cheese tub, to give the proper temperature to the whole before the dairy-maid adds the rennet and colouring. These preliminary operations being ended, the dairy girls dress, and having partaken of a piece of bread and butter, at 4 o'clock proceed with the men to milk the cows. The dairy-maid now commences the churning operations, which must be accomplished in not less than 50 or more than 60 minutes, by the power of either steam or horses. While the churn is in motion, she has time to beat the butter made the previous day, and to put it into casks, all attention being paid that no interstice shall remain either between the layers of butter or the sides of the casks. The cheese-maid is now occupied in cheese making. At half-past 6, the milkers have finished milking; the milk is conveyed in pails swung upon bars stretched across a wagon, to the dairy house, and carried into the cellar by the girls, where it is immediately strained through a hair sieve into the tubs, each containing a measured quantity; this duty is performed by the cheese-maid, who must have finished, with the assistance of the cook, cheese-making on the return of the milkers.

The girls then carry the tubs placed out to air into the cellar, where they remain 12 hours. They then go to breakfast. After breakfast they wash out the milk pails and the conveyance pails, the churn, &c., and all other utensils that have been used that morning, and wash out the ante-cellar, and then they dress. At 9 o'clock they do any work unconnected with the dairy until 11 o'clock, when they are called to dinner; at 12 o'clock they lie down to repose until 2 o'clock, when the routine of work is repeated as above described, and completed at 7 o'clock, when they sup, and dispose of their time until 9 o'clock, at which hour they retire to bed.

The dairy-maid is by far the most important person in the establishment, as on her skill, attention, and diligence, depend in a great measure both the quantity and quality of the butter, and, by consequence, the profit of the produce. She must not only thoroughly understand but accurately observe the moment when the cream has attained the proper degree of acidity in the cream tub, also regard the temperature, adding either hot or cold water in the churning. The cream, when skimmed, is put into a large tub, where it generally

remains 24 hours, or until it has reached the first stage of fermentation before it is churned. When the butter "is come," it is placed in a trough and washed over with water as cold as possible, to separate the milk from the butter; the water is drawn off, and the butter is beaten so much that the milk is almost entirely pressed out; salt is then sprinkled upon it, and the mass loosely turned over, to give the salt time to extract any remaining particles of milk or moisture. After remaining 12 hours, the butter is again beaten, to squeeze out the brine, and after remaining 12 hours longer it is again beaten and placed in the casks.

Although it is an ascertained and undeniable fact that the quality of butter depends much upon the nature of the pasture, yet, to the untiring attention and experienced skill of the Holstein dairy farmer must in a great measure be ascribed the great reputation which his butter has of late years held in the London market, to which the greater part finds its way.

The qualities of first-rate butter are considered to be, first, a fine even yellow colour, neither pale nor orange tinted; second, a close waxy texture; third, a fresh fragrant perfume and a sweet kernelly taste; and fourth, good butter will, above all, be distinguished by keeping for a considerable time without acquiring a rancid flavour.—*R. S. Graham, Bulteigh, Nov. 12.*

THE GOVERNOR OF ALABAMA ON THE TRUE SOURCES OF AGRICULTURAL PROSPERITY.—HEAR HIM.

In April, 1848, near two years ago, the question was discussed in the FARMER'S LIBRARY, which we were then conducting in New York, whether, "THE LOOM SHOULD COME TO THE COTTON, OR THE COTTON GO TO THE LOOM?" The question was suggested by the observation of the enlightened editor of the *New Orleans Commercial Bulletin*, that

"We buy in New Orleans, negro cotton goods, manufactured from one bale of cotton, for about the same sum that we receive for five bales of raw cotton; the other four bales being paid for the labour and profits which are divided between the ship owner, northern or English operatives, mill proprietors, agents and commission merchants; all of which would be retained at home, for the benefit of our citizens, had we cotton mills established here."

The essay to which we have referred, was widely published in the Southern papers, and it is no *self-flattery* to say, that no single article ever, or very rarely, proved more efficient in commanding the public attention, nor is it a violent presumption to assume that its effects have been manifesting themselves, not only in the altered tone of public sentiment and public men, but in practical measures to reverse that order of things, under which the American planter and farmer have lost, for a long series of years, the many millions which the English manufacturer and farmer have gained. In a word the loom is taking its place by the side of the plough. In that essay this proposition was laid down, and it has been, since the day of its first appearance, the aim and the business of "*The Plough, the Loom, and the Anvil*" (for the benefit of the first named) *to prove its truth, in every form, and by every means of illustration.*

It was there asserted that

"The labour of production is as valuable as that of conversion, and a just distribution of the proceeds would give to the planter, eight parts out of thirteen, leaving the remaining five for the persons employed in converting the cotton into cloth. We see, however, that the planter gives five bales for one, or a hundred for twenty; whereas if the distribution were in the just ratio of the labour employed, the planter should have sixty and the manufacturer forty."

This problem was sustained by an elaborate examination of the whole ques-

tion, as to the capital and labour embarked in the processes of production and manufacture, and the cost of transportation and exchange, and although it may be said to have "gone the rounds," nothing in the shape of argument, has been hazarded in the way of contradiction. In the meantime the investment of capital and labour in manufacturing industry, and the change of public opinion in favour of the diversification of employment, have been proceeding in a manner unparalleled in the industrial history of any country—it needs, in fact, only to be looked at with eyes divested of party spectacles, to excite universal amazement that we should ever have consented to send abroad for manufactures of which the raw materials are the natural growth of our own country, and of which so large a portion of the value is actually made up of the agricultural products of countries, whose labourers would deem it a luxury and a blessing, for them and their families, to *enjoy the offal of a southern plantation.*

As an evidence of the change of public opinion in favour of diverting labour "into all the channels in which it can be made useful and profitable, instead of employing the entire capital of our agriculturists in the production of a single staple," we submit the following extracts from the late message of Governor Collier of Alabama :—

"The inquiry is ever addressing itself to the inquisitive mind, why is it that Alabama, with her delightful climate, her healthfulness, her fertile soil of varied and almost universal adaptation, her abundant and unsurpassed water-power, her hills and vales for grazing and browsing, her untold acres of coal, iron, marble, and other minerals, does not furnish more striking evidences of prosperity and wealth? The question is easily answered. She does not avail herself of her vast resources—too large a portion of her population are unemployed—labour and the pursuits of capital are not sufficiently diversified. She grows cotton in abundance, at a profit below the statute rate of interest, while she yields to the manufacturer in Europe or New England, exclusive of the cost of transporting the raw material, a profit exceeding her own at least two hundred per cent. Small as is the income from this source, it is charged with the burthen of supplying all the necessary wants of the family, and most usually leaves but little to compensate the planter for his care and anxiety. The natural tendency of such a state of things is to impoverish the soil, to disincline us to improve and beautify our homes, to divert our attachments—to keep us ever on the inquiry for a purchaser, and a country where our wealth may be augmented with increased rapidity. A people thus living cannot enjoy that share of contentment and prosperity which Providence wills, and which is attainable with effort."

* * * * *

"We rely too exclusively upon our agriculture as a source of wealth, while we are exhausting our lands without an effort to reclaim them. But few form attachments for the soil, and only seek to make it most productive at the least cost and trouble. Such a life is unfriendly to social enjoyment and the cultivation of the sympathies—it prevents us from devoting the proper share of attention to the improvements of the intellectual powers and the elevation of the moral feelings.

"The remedy for these evils is to divert labour into all the channels in which it can be made useful and profitable, instead of employing the entire capital of our agriculturists in the production of a single staple—diminishing the price by an over supply. The producer, the manufacturer, and the consumer would then be placed in proximity to each other—each pursuit would stimulate and advance the other; and agriculture, which languishes in solitude, would become animate and prosperous. The concentration of industry and capital at home would arrest the propensity of our people to emigrate, and education in all the departments of knowledge would receive an impulse which would be felt and seen everywhere around us. The benefit of such a state of things is exemplified in many States of the Confederacy; but, perhaps, is more fully illustrated in Massachusetts and Rhode Island. These States take our cotton and wood, and manufacture them into cloths and ships, selling us the former at compensating prices, and with the latter become our carriers upon the ocean. Thus they grow rich in despite of the inhospitableness of climate and inaptitude of soil to grow a sufficiency of breadstuffs; while Alabama, with quite enough surplus labour to manufacture her cotton and produce all her provisions, without diminishing the product of the great staple, is comparatively poor. These States safely and successfully employ a banking capital of forty-five mil-

lions, and have millions always awaiting an opportunity for profitable investment; while the people of Alabama, with natural advantages greatly superior, are, the most of them, borrowers, without an active moneyed capital adequate to the supply of their own wants. If, in ice-bound New England, with a soil which, even in its virgin state, requires artificial stimulants, such are the results of well-directed enterprise and indomitable energy, what might be achieved in the South, if *in practice* we manifested the economy, the force and energy of our puritan brethren. With climate as mild as could be desired, the healthfulness of which is attested by the comparative bills of mortality; with a soil suited to the production of almost everything that vegetates—in short, with the elements of wealth scattered broadcast in our midst, ready to be made available by effort, the South has voluntarily yielded up her birth right. Shall we not claim the heritage which Providence has graciously tendered? We have already slumbered our twenty years. Shall we still sleep on? Shall *inactivity*, while everything around invites to *industry*, still be the password; and the imputation of ignorance and indolence, by those we have enriched, be repeated again and again without awakening us to our interest? Or, shall we rise with strength unimpaired by age, or unexhausted by effort, and entering the arena soon become a mighty competitor in the race for development and wealth?"

There are, we are aware, those who will say, that the loom and the anvil are taking their places, in the regions where the raw materials are produced in the natural course of things; and that no legislative encouragement is needed to accelerate or secure that result. But is it no encouragement that a duty of thirty per cent. *has* been levied to enable us to bring about this state of things? Call you *that* free trade? Suppose then the present protection, such as it is, were withdrawn, what would be left to the labour employed in manufactures, but to fall back upon the plough, leaving still less "to compensate the planter for his care and anxiety?" Is there in fact no danger that the public mind, deluded perhaps by exaggerated statements of profits, may run too rapidly into the other extreme, and make investments in manufactures on the anticipation of profits, which the experience of New England manufacturers, with all their skill and capital, clearly show can never be realized under the present fraudulent system of ad-valorem duties? Need we tell the reader that *our* object is to see a market created for our own agricultural produce, to ensure which the more numerous, and the more prosperous, and the *nearer* their customers, the better for the planter and the farmer? Is it not so?

Finally, we would ask those who have without reflection, or if with reflection, certainly without justice, charged this journal with having *party* aims, whether we have contended for anything more than is here laid down by the democratic governor of democratic Alabama? Are not the positions he lays down, as essential to the prosperity of agriculture identical with those maintained in this journal?

P. S.—Truth, and justice to Governor Collier, require that we should state, that when the preceding was sent to the printer, it was all that we had then seen of his Inaugural Address. But for this statement, it might be presumed that *we* had selected these passages from the context, leaving the public to infer a coincidence between his politico-economical doctrines, and those which are habitually maintained in this journal.

Since then, however, some friend has kindly sent us anonymously, the governor's inaugural address, and his message to the assembly, both of which we have read with equal attention, and respect for the author. We now append *a few more extracts* from the former, as many as we can find room for, on sending back the proofs to the printer in Philadelphia. It is but too clear, that the governor looks on the avowedly "protective tariff" of 1846, as all-sufficient to bring about the wholesome results he has depicted so vividly, as being so desirable in themselves, and so indispensable to the development and fruition, of the rich resources of Alabama. We will only take with him then, most respectfully, the liberty to ask him, to read the

essays—on the “harmony of interests, agricultural, manufacturing, and commercial,” which have appeared, and are appearing in this journal. At all events it will be admitted that something has been gained towards the establishment of our doctrines when high public functionaries, avowedly friends of “free trade,” admit, as does Governor Collier, that 30 per cent. duties *is good!*

Thanks to the unknown friend, who has had the kindness to send us these interesting documents. Where the light begins thus to dawn, let us hope it will go on opening into the full blaze of unmistakable truth. With such perfect agreement as to ends, let us hope for equal coincidence ultimately as to the means, as far as the latter may be essential to the former.

“In the employment of capital, it is an inquiry worthy of consideration, whether moral duty does not make it imperative upon us, so to direct it, not only that our individual interest may be advanced, but, if possible, it may be promotive of a more widespread benefit. How else can those who need our assistance be more effectually aided than by placing within their reach the means of self-support? *There are vast numbers of both sexes at the South who would labour if suitable employment were offered them at remunerating prices; but this they cannot now obtain, because there is an excess of labourers. This condition of things demands that we should endeavour to bring into active service the unproductive labour of the country. To this end, it is indispensable that the South—the country best adapted—should manufacture extensively, the raw material found within its bosom or grown upon its surface. We should introduce new staples and become our own exporters and importers. In short, we should husband and concentrate our resources, so as to provide for our own people and enrich ourselves,* before embracing with our sympathies those who, in cultivating commercial intercourse, have no other object to accomplish than self-interest.† Centralization, as it has been designated, which prompts us to look abroad and neglect the improvement of our condition, must be repudiated, or we shall fail to realize our appropriate destiny.‡*

“It is a very common opinion at the North, that the physical condition of the white man indisposes him to labour at the South, and that if it were otherwise, he would not work in a country in which there are a different and subordinate class of labourers. The opinion is evidently erroneous, and disproved by the observation of all of us. There are many men in this country who have grown rich, the germ of whose wealth has been the unassisted labour of their own hands, in the cultivation of cotton; and *many of our most thrifty planters of limited means employ no other labourers but themselves and their children.*

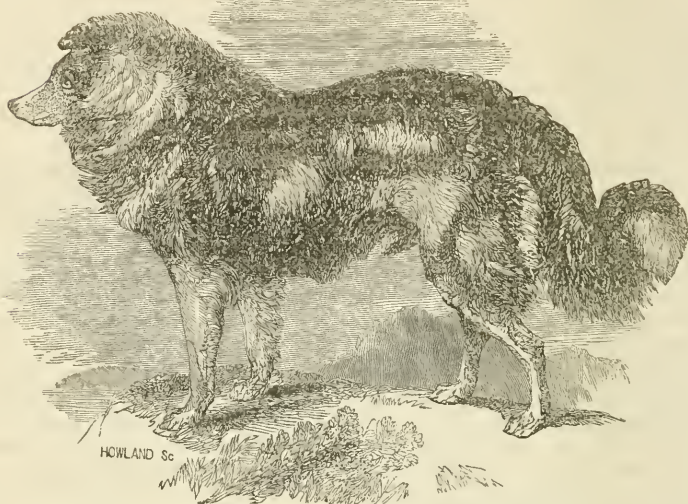
“History gives no account of any people, more economical, sagacious, energetic and industrious than those of the South, when prompted to effort by proper incitements. They are capable of toil and endurance either in the morass or on the mountain, in the workshops or fields, which cannot be exceeded by the inhabitants of the North. Our State is fruitful of such examples. Let our legislation be directed, so as to evolve an exhibition of the qualities indicated, and they shall become characteristic of the masses.

“The adjustment of the tariff in 1846, upon principles *quite as just as we should desire*, considering the diversity of interests and opinions to be consulted, and the satisfactory provision for the safe-keeping and disbursement of the revenue, have removed all ground for controversy with the Federal government upon these questions. Until they were settled satisfactorily to the ascendant party in this State, they furnished appropriate subjects for remonstrance, but nothing more.”

* Will not some of our readers suspect us of having taken some leaves from the governor's book? We even begin to hope for the honour of placing him on the list of our patrons if he be not already there.—*Edit. P. L. & A.*

† Yes, but the difference is just this, that while the foreign manufacturer of the cloth and iron we import, eats the products of foreign ploughs; the American manufacturer going, be it admitted, like all others, for his own interest, eats the American farmer's beef, and corn, and pork; and is kept by the avails of his manufacturing industry from turning his labour and capital, to making cotton and sugar.—*Edit. P. L. & A.*

‡ For the most lucid development of this idea, marking the difference between *Concentration* and *Centralization*, see that chapter in Carey's work, “The Past, the Present, and the Future.” A work which, while apparently less known at home, is making its way into the libraries of schools and of scholars abroad, as a standard authority on questions of the deepest import, in political and social life. It is now, we understand, being translated for adoption in the universities of Sweden. Prophets are not always honoured in their own countries.—*Edit. P. L. & A.*



DOGS AND DOG-BREAKING.

BY RAMROD.

MAN has not a more faithful servant than a dog. Amongst our fellow-men we find, alas! great variableness. The loss of fortune, the loss of power, or the loss of health, each has its result. Friends who once rallied round us, "in sickness or sorrow shrink from the test;" but the dog never changes in his feelings towards us: he is always the same. Faithful to his master, he lays at his feet his courage, strength, and talents, and only waits his commands to fulfil his will; he is always ready to forgive, and will lick the hand that gave him pain—in this, a good example to us all.

The shepherd's dog is no doubt the stock from which every sort has sprung—he is the body and root of the tree—and how extraordinary their sagacity! they really can (as a farmer observed to me the other day) "do almost everything but speak." I was riding a short time back along a road in South Wales, and met a flock of sheep (a lucky omen, by the way; at least so say the old women) driven by a man and dog. I heard the man say something in Welsh to his faithful follower, but did not understand what it was till I saw the dog jump over the hedge, and make a circuit which brought him to the entrance of a lane; I then saw that he had been desired to go there to prevent the sheep going the wrong road. On the hills the shepherds' dogs know their master's sheep amongst some thousands, and will gather them together. The Scotch are preferred to the Welsh dogs, as being more sagacious and easier taught.*

* The Scotch sheep-dog or colley, here referred to, prefigures this article. For the Spanish sheep dog the reader is referred to page 53 of "The Plough, the Loom, and the Anvil," Vol. I., and for the portraits and characteristic qualities and uses of both, as also for those of the *Drover's* or English sheep dog, employed in driving cattle, he can turn to Randall's admirable work on Sheep Husbandry, of which, MR. COCKRILL, of Tennessee, one of the largest and most successful breeders of fine wool sheep in this or any other

As regards breeding, the best time for pups to come is about May; they will then have all the summer before them; and, in selecting whelps, choose of course the strongest. But I will here mention that it does not always follow that the largest pups turn out the best dogs, but still it must be observed as a general rule. I know instances where whelps which have been discarded have given the go-by to those selected as being the best. As soon as they are taken from the dam, let them be well fed upon potatoes, buttermilk, and oatmeal, and but little flesh, as that leads to the distemper: above all, take care that your young dogs have plenty of exercise, and plenty of water. Occasionally, give them a tablespoonful of syrup of buckthorn—a better medicine you cannot give them. The first complaint to attack a dog is the distemper, which each has one time or another; it mostly comes on before the expiration of the first year. When it makes its appearance, syrup of buckthorn and sulphur may be given with good effect; and, at a more advanced stage, the following:—

Opium, 3 grains,
Emetic tartar, 5 grains.

To be given every third night. The dog must be kept very warm, and fed with warm broth, and his nose washed out with alum water.

A dog never has the distemper above once. Many inoculate for it, and it is done in the following manner:—

Take a little mucus from the nose of a dog having the distemper, and put it up the nostril of the whelp: this must be repeated till it takes properly, and before inoculation the animal should have a few doses of syrup of buckthorn.

The earlier you take young dogs into the field the better, and be sure to ascertain, in the first instance, what sort of temper they possess; some require severe treatment, others the mildest. Without proper attention on this head the best dog may be rendered worthless.

Well-bred dogs will begin to hunt at a much earlier age than cross-bred ones, and will likewise require less breaking. And here I will recommend the young sportsman not to be too hasty in forming an opinion as to the merit of the animal he is breaking, as some dogs are a long time before they exhibit the disposition required. I had a dog—and he was the best I ever had—which I gave away after a few trials, thinking it perfectly useless to attempt to make anything of him. Now, this dog turned out a first-rate setter, and I purchased him back from the man I had given him to—a keeper. This has been a lesson to me ever since, not to pronounce a dog good-for-nothing till I had given him a good trial.

At five or six months old, you should take your whelps out, at first only for a walk; by degrees let them ramble about, always teaching them to come back when you call—this leads to obedience; at the same time you can teach them to *down*. If a dog will not do this, you must push him gently down; after this, he will soon come to understand what you mean him to do; if not, a little of the whip must be given, but recollect, whenever you correct a dog always to make friends with him before you let him go, otherwise you will not in a hurry catch him again, and he will always be shy of you. Some flog their dogs without holding them, and frequently

country, says, he has thoroughly examined it, and has no hesitation in pronouncing it decidedly the best work, that has been offered to the American public, either at home or from abroad.

The readers of this journal already know that they can have a copy of it very handsomely bound for \$1, or bound in paper for 75 cents. It will be sent as a slight acknowledgment to any friend remitting \$10 for five subscribers.

give them a parting lick by way of disposing of the wrath they may have left—a worse plan cannot be adopted, as, after this, you can rarely get a dog to approach you.

When a whelp is first taken into the field, it should be with an old dog, and one which cannot easily be spoiled. At first he may be allowed to chase anything (excepting, of course, sheep; otherwise he may take to kill his own mutton—an amusement rather too expensive to be permitted), for if stopped of this too soon he will become shy. In a short time he will understand the thing, especially if worked with an old dog, and will go cautiously when he scents game; but, after many trials, should he evince no disposition to do this, he must be taken to the spot from whence the game sprung, and compelled to crouch to the word *to-ho!* at the same time push his nose down to the ground; after this, the moment the old dog draws, you must caution the young one by holding up your hand, and calling out to him (in rather a sharp tone if he is inclined to disobey you), “*To-ho!*” When he points walk quietly up to him—do not run, or he will certainly move—and give a few words of encouragement, such as “good dog,” “*to-ho!*” &c. Should he run in, take him back to the place he moved from, and there make him point; and the same course may be pursued if he chases hares. When the old dog stands, the young one must be taught to back him; he must be stopped the moment the point is made; if you cannot get him to back, a little whip must be used. Holding up the hand is a signal to back, and therefore you must use him to that. Begin early to teach the young dog to quarter his ground from right to left, or, *vice versâ*, and not break fence. Always give him the wind when you beat a field, and if he does not cross properly he must be whistled to, and signalized by waving the hand which way he is expected to go. Your dog should cross about twenty-five or thirty yards before you, and if he beats too wide should be recalled by a slight whistle, which he must be taught to obey; if he pays no attention to it you must show him the fruits of disobedience by giving him a little chastisement. By encouraging dogs when they behave well, and punishing them when they do badly, they will soon become tractable; but, as I before observed, according to the dog’s temper so you must punish or encourage. Great attention must be paid to this, otherwise a young dog will be soon spoiled, and become fit for nothing but the rope. “He is so shy I can make nothing of him,” is an observation I frequently hear made; the truth is, he can make nothing of you, and really does not know what to do. I have had many dogs given to me as being perfectly useless, which have, after a little time, turned out well. I remember once breeding some whelps; I kept two for myself, and gave one away to a neighbour. Those I had turned out very well, whilst the one he had was good for nothing. And how was this? Why, simply that the temper of the animals was shy. This I took care to find out, and acted accordingly; he did not; the consequence I have shown. Some young dogs are alarmed at the report of the gun, in which case much patience and gentleness are required; for, if roughly dealt with, they can never be cured of the fault; but with encouragement, and occasionally allowing mouthing of the bird, the fault in time may be cured. Every young dog will chase hares at first. If he persists in doing so after a little time, you must be severe with him, bringing him back to the spot from whence he started, and there making him point, using at the same time the words *ware chase*.

For dogs difficult to break, the line will be of service; for myself, I have broke many dogs and have never used it; but still, in such cases as the one mentioned, it may be attended with service. This line is about fourteen yards in length, and is fastened round the animal’s neck; the use of it is this; should he attempt to run in, you check him smartly with it, using at the time the

word *to-ho!* if he be not obedient and come back when called, the cord may be made use of to remind him of his duty.

Many persons, who otherwise take a pride in breaking their dogs, frequently omit to teach them a most important accomplishment, or at least neglect to keep them to it after they have been taught. I allude to *down charging*. By want of attention on this point many shots are lost, especially in turnips and potatoes, where birds being dispersed, rise one or two at a time. The instant you fire, each dog should *down*, and not move again till you say "*Hold up*." A dog I once had, always remained quiet till he heard the click of the lock preparatory to putting on the cap; this he took as a signal that all was right. Nine keepers out of ten neglect to teach their dogs to *down charge*. I cannot make out why such should be the case, but certainly so it is. I observed a short time since, as I rode along the road, two men—keepers I imagined them to be by their appearance—who were shooting. Each time they fired their dogs were on the move whilst they were loading. As it happened no birds were sprung, for the covey had all risen nearly together, but had there been any remaining the men would have lost the opportunity of getting shots.

When you first take a whelp into the field, from that time begin to teach him always to follow, and never to go before you over a hedge. If brought up in this way he will never break fence.

I do not like to see a dog *rake*—that is, hunt with his nose to the ground—as he is more apt in that case to spring the game. If he is inclined to do so, you must call to him, in an angry tone, "*Hold up!*" A dog which goes with his head high will find the most game, and in the best style.

The first season is a critical time with the young dog; if he is then neglected, or allowed to indulge in any bad habits, he is forever spoilt. At that time no error should be overlooked, and no deserved encouragement omitted. Then will be the time to determine his worth, whether or not he is good for anything.

I have always preferred to break my own dogs, as I think it of importance that the master and dog should understand each other. I am also an advocate for every coachman driving his own horses—that is to say, each man should drive his own ground double, or go through and return next day. Men have such different hands, that horses cannot work pleasantly when driven by different people; in fact, they never know what to be about, as one man makes play over one part of the ground, the other over another.

Keepers and dog-breakers are frequently a set of muffs, and do not, or cannot, make their teaching plain; their pupils are licked, for what they do not know; in fact, the dog would, if he could speak, say with Hercules, "I still know naught; thy teaching is not clear." However, I do not mean to include all in what I have been saying; there are, doubtless, many excellent men who understand their trade: to such I would recommend the gentlemen to go, for, unless he has time, understands and takes an interest in the thing, he might doubtless spoil the young dog; but, for any one who has time and inclination, it is certainly the best plan to *bring your dogs up at home*. Every man has a different way of teaching: consequently, when you get your whelps home, most likely you cannot understand them, nor they you; whereas, had you broken them from the beginning, all would have gone on merrily.

Be careful never to name your pointers or setters Carlo, Ponto, or any name ending with o, as they will frequently confound it with *To-ho!* Let the name you choose be one syllable, such as Nell, Poll, or Bell, but never take out a Bell and a Nell together, but each dog should have a totally distinct name.

Your spaniels should be always much of a size and color. Nothing can

be prettier than a team of such dogs when they match, and are properly broke.* Each, when you fire, should drop to the gun: this has a very pleasing effect: six or eight dogs are beating together, and some of them tonguing, you fire, and all is silent till you have loaded, and given the signal to move on, by saying "Hold up!" Woodcock shooting with spaniels is beautiful sport; it is most pleasing to see how they search every spot, and their activity is most surprising; not a place escapes them—how quick they move round every bush and tree! Ah! mark that cock just risen from the foot of yon stub; he thought himself secure there, but Dash found him out and soon put him to flight. I warrant he is secure enough now in the game bag, and may be soon have company.

Some persons prefer mute spaniels. I cannot say I do, for I like a little music, but not too much, which is worse than having none. However, mute dogs have of late years come very much into fashion.

As regards a dog's power of scenting, it is unfair to judge by first appearances, for it varies so much according to the day, soil, and weather. In a north wind there is never any scent, whereas, in an east wind, with snow upon the ground, I have seen it lie well; but a south wind is to be preferred to any other:

"A southerly wind and a cloudy sky
Proclaim it a hunting morning,"

says the old song, and, therefore, if it is good for hunting it is good for all sport. In foggy weather there is very little scent, and the same may be said of a white frost, and when it is going off.

It is strange, but nevertheless true, that, when dogs roll much, and when they come out of cover with their tails bloody at the point, there is never any scent.

All dogs with broad heads have a better sense of smell than those with narrow heads. It is so with the fox and wolf, and their olfactory organs are known to be great. For this cause I like to see my puppies with good broad heads, and always choose such as are so formed. I also look to their ears and feet; the former should be large and pendent, and the latter round and well spread.

A good retriever is a most difficult dog to obtain, and will always, if perfectly broke, fetch a good price in the market. Almost every sort of dog may be taught to retrieve, provided pains are taken; but where the commencement of the education is suffered to be carrying sticks, and other hard substances, they never turn out well, their mouths become hard, and, in consequence, all the game they carry is spoiled. A stuffed glove is a good thing for them to carry at first, as it is soft; should the young dog hold it rather tight, do not force it from him, but gently coax him to let you have it; if you pull he will pull too, it will be "pull devil, pull baker," and if it is torn, from that time he will learn to tear game.

Retrievers should never of their own accord rush to recover game, but ought to remain perfectly still till desired to move.

Many teach their setters to retrieve—a plan I do not approve of. An old dog may be made use of in this way, but to accustom a young one to it, is

* The writer here refers to the cocker or King Charles breed of spaniels, a small beautiful race, with long soft silky hair. They are usually liver and white, or jet black and white. They are or were some years since, in great perfection at Carleton Hall, in possession of Mrs. McTavish, from the kennel of the Marquis of Wellesley, who married her accomplished sister. All her friends remember Mrs. Commodore Ballard's beautiful and faithful old spaniel *Hope*. Gladly if we could, would we register with honour, the name of every good and gentleman like dog that ever lived.

certainly a way to spoil the animal. I know dogs that have been perfectly steady till their services were required to find a wounded bird, and after then have taken to rush in. To endeavour to recover a bird which runs with either a pointer or setter is the most certain way to spoil them; and yet I frequently see persons, who profess to know a great deal about sporting, pursuing a bird they have wounded up and down a potato field, encouraging their dogs to hunt, as though they were terriers; and, when the same dogs make a bad point, and are unsteady, finding fault with them, forgetting with whom the fault really lay. Now, I would ask, are such persons to be trusted to break a pointer or setter? Certainly not; and I would advise my generous friends not to lend such as they anything but an old dog, which cannot easily be spoiled.

As regards feeding your sporting dogs, let it be upon oatmeal and a little boiled flesh, such as leavings from the house. Never give them raw flesh; that fills them with every humour, and leads to distemper. Every week I give my dogs some sulphur in milk, and I always keep a lump of rock sulphur in the water they drink; this, I am convinced, tends to keep them in health. If you are constantly with your dogs—that is to say, in the habit of seeing them—you will soon discover if they are getting out of health, in which case you must prevent illness by a little medicine, judiciously administered; by strict attention you may prevent anything serious attacking your kennel.

One of the most troublesome complaints to get into your kennel is the mange; for where it takes hold, there it will remain for some time, spreading from one to the other; it is catching, and therefore any dog attacked with it must be removed, without loss of time, from the rest; and not only that be done, but the straw the diseased animal has been lying on must be taken away and destroyed, and the place it has been on well cleaned. The mange will proceed from dirt and bad food. The best cure for it is—

Oil of tar,
Sulphur vivum,
Train oil (of each an equal quantity).

With this the dog should be well rubbed several times in the day, and at the same time sulphur should be administered. When the disease is very bad, mercurial ointment may be rubbed on the part affected; but, as this will kill a dog if applied injudiciously, it must be done carefully, and the dog muzzled.

Of hydrophobia I shall say nothing; there is no cure for it, and I recommend the dog should be destroyed immediately, if you have any suspicion it is going mad.

I shall conclude this article with a few words on kennels and their management, and shall first notice cleanliness, without which no dogs can thrive. To such as are too lazy to see after their own affairs I would recommend the adoption of the box kennel, as that will require less trouble to keep it clean than the house. With a long chain the animal will be able to come out, and consequently will not dirty his abode. I always have my boxes made with drawers, which come out behind; these I scour, and put in the sun afterwards to dry, any day when the dog is out. The chain with which the dog is fastened I have made with a swivel upon it, to prevent any fear of the dog hanging himself, should he struggle to get free. Any blacksmith will make the chain I have described.

To prevent the effect of damp upon the dog, I have adopted the plan of having wheels under my kennels. Thus, by raising them off the ground, I keep them dry, and am able to move the dogs wherever I please; thus in

cold weather I put it in the sun, and in hot weather in the shade—arrangements, according to the season, most grateful to the dog. Extremes of cold or heat that animal feels most acutely, which may be seen by noticing that it wraps itself in winter in anything warm, such as hay, straw, &c., of which it makes quite a nest; and in summer chooses the coolest place to lie in.

Light and air are absolutely necessary in kennels; and I may add in stables also, more especially perhaps in the latter. I have, for my dogs to lie upon, a bed raised from the ground about two feet; it is made of cross-bars; and to prevent the dogs getting beneath it, I have it boarded to the ground in front, the sides of course run up to the walls of the kennel. Though it is boarded to the ground, I manage to arrange it so that I can remove those boards in case it is necessary to do so, to clear away any dirt or straw that may fall underneath. From the bed should be a fall all the way to the opposite side of the kennel, through which a stream of water should be constantly running. The floor should be of brick, which looks much better than stone, and is easier kept clean. Every morning the kennel should be swept down, and every bit of dirt removed; fresh straw must be laid on the beds every other day; it must be wheat straw, and it should be sprinkled with flour of sulphur, to keep off fleas. Hay must never be put under dogs, neither do I recommend shavings, nor saw-dust; wheat straw is best, both for horses and dogs. Before putting it under them, shake it up well; and if you can get such as has been thrashed with the machine, it is to be preferred to that thrashed by the hand, as the straw is softer for the animals to lie upon. The door of the kennel should have wire in it, and a shutter to put up in cold weather. In summer you cannot give your dogs too much air, and in winter you cannot keep them too warm. Therefore, by having the wire in the door, and a shutter over it, you can regulate the temperature of the kennel as you like. If you have sufficient room, I would advise there should be a second yard for the dogs to go in whilst the kennel is being cleaned; it will likewise be a change for them, and is always useful to separate them during feeding or any other time.

One most important point for those to attend to who keep dogs in kennels is, that they have plenty and regular exercise. Without they have, all the good feeding you give them will never make them look well. They should be taken out every morning, if you do not intend to use them, for an hour at least.

Dogs, especially young ones, when confined in the kennel, are very often subject to worms; if such is the case, you never can get them into condition, and therefore you must endeavour to remove them. The best receipt for doing so is as follows:—

Linseed-oil, half a pint,
Oil of turpentine, two drachms.

For a young dog a little less than this will be sufficient. If it does not succeed the first time it is administered, repeat the dose. I have destroyed worms in a dog by simply giving a tablespoonful of linseed oil the first thing in the morning; but you cannot depend upon this as an effectual remedy. Many recommend calomel for this and many other complaints the dog is subject to; but I am no advocate for its use, and have always avoided introducing it into my kennel, and I think I can safely assert that my dogs have been always in as good health, if not in better, than those of my neighbours.

I shall now take leave of the subject; and thanking those who have read what I have scribbled, for their kind attention, and hoping the *bag* has been a good one since the season commenced, beg to remain the public's obedient servant,

R.

IRON MASTERS' MEETING IN BALTIMORE.

THE large list of patrons to "*The Plough, the Loom and the Anvil*," in Baltimore—men of superior intelligence and standing—and quite a number of whom subscribe for five copies each, for the sake of the cause we advocate, all conspire to make it in a manner obligatory upon us to preserve the following *Report*.

But independently of these considerations, who can fail to see, that the facts it discloses, and the policy it recommends, have a direct connection with the *agriculture*, not only of Maryland, but of the whole country? Why it is the very connection of these industries with agriculture, and the effect upon agriculture of the policy (wise or improvident), which bears upon them, that the farmer at his plough needs to have pointed out to him!

It was in truth, let us reiterate, for *that* purpose chiefly that we consented, at an advanced period of life, in casting about for some means of honest support, to run the risk of making a scanty living by devoting all our faculties to another agricultural journal. It was here, in this way, and in this only, that we could see that the Farmer and the Planter could now, and in the present state of things, be materially benefited. Why teach people how to make more, when markets are already filled to a surfeit? No! let us rather show, if we can, how the market may be steadily and *profitably relieved* of its surplus grain, and meat, and wool, and cotton. No agriculture ever did, or ever can flourish, where people hold conventions, as in some parts of the United States, to devise means for *reducing production*! It is only when the general study is, how to *increase production*, in order to reap the rich rewards of *increasing and steady demand*, that the discerning patriot may felicitate himself that his country is doing well—and that demand will never increase, (unless in times of famine,) while we import manufactures consisting chiefly of the beef and corn of other countries—supplied at a cheaper rate, because those who produce them are reduced to the alternative of working for and *supporting their families out and out*, on six dollars a month—or going into the poor's work-houses.

What does the farmer of the eastern and of the western shores of Maryland see in this lucid report; the result of proceedings had by gentlemen of the highest character, *irrespective of party*? "From the most reliable information," it says, "your committee have ascertained the cost of charcoal pig-iron in the vicinity of Baltimore to be from \$22 to \$23.50 per ton—and in the making of that iron, the material—ore, wood, &c., as it stands on the ground, is worth only from \$2 to \$3 per ton, the difference between the material and the cost [\$20 the ton] being *the wages paid in its manufacture*." And what becomes of these "wages?" *How are they applied?* Let the Maryland farmer unravel that question—a very simple operation; more easy than to straighten a tangled hank of his wife's yarn; and then he will see whether it is not as important for him, to study and to *control* the legislation by which these things are regulated, as it is to be told how he can lay a pound more of fat on the inside or the outside of a hog or a bullock; or how he can make *one bushel* more of corn on an acre, of which now he makes more than he can sell at a remunerating price? Well, as to these wages of \$20 for every ton of iron? Does not *almost the entire* amount go for daily food, and fuel, and clothing, the products of agriculture, for the labourers and their families, to whom these wages are paid?

This most reliable report—reliable as well for its source as for its facts—states the production of the furnaces and mills of Maryland under a protective policy, such as would give a fair chance to American labour, would be 75,000

tons a year. Allow then \$20 a ton in wages for its production, and we have 1,500,000 dollars for *this manufacture alone*, within the limits of Maryland, to be expended exclusively within her borders, for the products of American ploughs, and axes, and spades, and pastures; in wood, and corn, and flour, and beef, and pork, and mutton, and butter, and milk, and potatoes, and turnips, and wool. But perhaps there are those who think it better, that the American farmer should buy his iron, if, even for the time being only, he can get it a little cheaper, from countries where it is made by labourers who are reduced to the necessity of so living, as scarcely to keep soul and body together! From countries where, in fact, the soul of thousands every year abandons its "tenement of clay" sheerly for the want of any means to keep life in it: where in a word, thousands, as in England and Ireland, (to which the Baltimore and Ohio Railroad sends by the single dash of a *swan's quill*, for 23,000 tons of railroad iron), *perish* every year *by starvation!* and this is done in the name of "*free trade.*" *Free!* What magic in a word! What amount of mischief has been done in this world, by substituting the shadow for the substance! sound for sense! *Free trade!* Yes! a freedom that separates and drives far away the loom and the anvil from their natural position *near to the plough.* A freedom that compels us, against the laws of nature and of reason, to send away the raw products of the great machine, the land, thousands of miles away in search of small machines, to be by them converted into shapes ready for consumption. Why don't we send our wheat to England to be ground, and our timber to England to be wrought into ships and furniture, and our leather to be made into saddles and bridles? It would only be carrying out the system!

IRON MASTERS' MEETING.

At an adjourned meeting of the Iron Masters and others interested in the manufacture of iron in Maryland, held at the Exchange Hotel on the 2d instant, S. S. LEE, Esq., made the following report on behalf of the committee who had been appointed at a previous meeting to report upon the present depressed condition of the iron interest of the State:

The committee appointed at the meeting of the iron masters, held in Baltimore on the 3d November, to report upon the present depressed condition of the iron manufacture of the State, respectfully report:

That, in the discharge of the duty assigned them, they have obtained information from every furnace and rolling mill in the State. The number of furnaces is thirty-one; the number of rolling-mills for bars and railroad iron is five. Of the furnaces, eleven have stopped within the last two years, and six more have discontinued their mining operations, and are stopping as fast as the material on hand is used up. Those now at work must also stop, unless there is a change in the condition of the trade.

The rolling-mills for the manufacture of bars and railroad iron show even a more disastrous condition of that branch of the iron interest of the State. Of the five mills, only *one* is at work, and that one but partially so; the others having been compelled to discontinue their operations, the price for English bars and rails having ruled below the cost of producing them for the last two years.

The amount of iron produced when the works are in operation is about 55,000 tons of pig, and about 20,000 tons of bars and rail per annum. In the manufacture of this amount of iron, support is given to nearly 50,000 persons in our own State; while in the coasting trade incident to it, a large number of men are employed from other States; for a great portion of the pig iron made in Maryland is carried to the manufacturing districts of New England by their coasting vessels, and most of the bars and rails to other parts of the country.

Your committee finds the chief cause for the extraordinary depression of the iron interest to exist in the fluctuations of the English and Scotch markets, growing out of interruptions in the usual channels of their trade; for whenever such interruptions occur, as in '41 and '42, and in the past two years, '48 and '49, their surplus production is thrown upon the American markets, glutting it, and thereby causing the stoppage of our works, and the consequent ruin of a large number of our manufacturers.

Your committee can see no remedy for this, so long as the present duty on iron remains

unchanged, and the very great difference in wages between the countries exists. The English and Scotch iron masters have perfect control over their labour, until it is reduced almost to the *point of subsistence*, through their thorough organization, the low interest on capital, and the *superabundance of labourers*—while, in the United States, the demand for labour is such that the iron masters cannot reduce wages below the price paid to labourers in other branches of business. At the regular quarterly meetings of iron masters in England, the *price of iron* for the ensuing quarter is declared, and the *price paid for labour* depends upon the *price of iron* so declared.

The power which they possess over their labour is exhibited in their ability to reduce the price as the necessity of the case may require, and still continue to manufacture it. For example: during the years 1845, 1846 and 1847, the price of bar iron at Liverpool (see statement annexed) averaged respectively, £9 4s., £9 13s., and £9 17s.; and before the close of 1848 the price was reduced to £4 15s., and has varied but a few shillings from that time to the present, showing a reduction in less than twelve months of nearly 50 per cent. In Scotch pig iron the reduction has also been as great. In 1845 the average price was £4 0s. 3d., and in 1848 the average price was only £2 2s., and at that extreme low price it has continued to the present.

From the most reliable information your committee have ascertained the cost of charcoal pig iron in the vicinity of Baltimore to be from \$22 to \$23.50 per ton, and in the making of that iron the material—ore, wood, &c., as it stands in and on the ground, is worth only from \$2 to \$3 per ton; the difference between the material and the cost being the wages paid in its manufacture.

There are situations in the State where coal and ore are so contiguous that coke iron can be produced at a less cost; but when the transportation to market is added, the cost there does not differ materially.

The experience of the last four years has shown that the *ad valorem* duty, *without a minimum*, as laid by the Tariff act of 1846, has operated very injuriously to the interest of the American manufacture. For when the price of iron is high abroad, the duty is high at home, giving to our manufacturers an incidental protection, which continues so long as the foreign market remains high; but as soon as the foreign market fluctuates the duty falls with it, so that at the time when the highest duty is needed by us to enable us to sustain a competition with the foreign manufacture, the protection which we had received from the duty is taken from us—thus acting as a *sliding scale against* the American manufacture. When the tariff act of 1846 was passed, the 30 per cent. duty on the price of iron at Liverpool (\$50) was \$15 per ton; the cost and duty added made the price \$65. But for the last two years the price has fallen from \$50 at Liverpool to \$27 per ton, and the duty from \$15 to \$8 per ton—making the cost of iron and duty \$35 per ton, a fluctuation of \$30 per ton.

To sustain our manufacture we require the *reverse* of the operation of the present *ad valorem* duty. When the price abroad is highest we need the least duty; and when it is lowest we need the highest.

It is of the greatest importance to the prosperity of the American manufacturer that the fluctuations of the foreign market should have as little effect as possible upon our own. They may be lessened by a fixed specified duty on the part of our Government, or by a sliding scale of duties in *favour* of our manufactures, *not against them*, as our present *ad valorem* duty produces.

We do not ask for excessive or prohibitory duties, but we respectfully ask, in collecting the duties necessary for the operations of the Government, that they be so arranged as to *foster and promote* the American manufacture.

Your committee would call your attention to the very large quantity of Scotch pig iron and English bars, which the foreign manufacturers have sent into the markets of this country in the last year. Availing themselves of the low duties, they have sent large stocks of iron to our markets, which from the very low rates of interest on capital at home, they can afford to hold until the regular wants for consumption absorb them.

In like manner has the *ad valorem* duty operated upon other important interests of our State, in the manufacture of many articles from iron. The shipping of Baltimore has been supplied with cables and anchors of the manufacture of Maryland until within the last two years, but the great fall of prices abroad, and consequently the duties at home, has caused those establishments to be closed, and the business to be entirely stopped.

Your committee would therefore recommend that the condition of our works, and the causes which have produced it, be made known to our Representatives in Congress by a committee, who shall urge upon them the necessity of such modification in the arrangement of the tariff necessary to the support of Government as will afford us all the benefit of incidental protection, in the collection of the revenues—either a specific duty, which

is the most simple, or a sliding scale which shall increase the duty with the fall in price in the foreign markets. Respectfully,

JOHN BARKER, STEPHEN S. LEE, E. T. ELLIOTT, PETER MOWEL, H. ABBOTT,	}	Committee.
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The report having been read, it was unanimously adopted.

E. Pratt, Esq., moved that a committee of ten be appointed by the Chair, in accordance with a recommendation of the report; and that said committee have power to fill any vacancies which may occur.

The resolution was adopted, and the following gentlemen appointed as that committee, viz: Messrs. E. T. Elliott, E. Pratt, Stephen S. Lee, Peter Mowel, of Baltimore; Messrs. C. E. Detmold, John S. Graham, of Alleghany; Messrs. Joshua Bryant, Isaac Rodgers, of Harford; Messrs. Richard Green, Robert Howard, Baltimore county.

And, upon motion, the proceedings were ordered to be published.

ANOTHER AGRICULTURAL CONVENTION IN VIRGINIA.

WHEN the doctors mistake the symptoms of the disorder, how can they rely on their remedy?

Time out of mind, have they been holding "Conventions," and forming societies, to improve agriculture in Virginia, as if her sons were deficient in knowledge or zeal! Whereas, we venture to say, that in the whole Union, the agricultural community is nowhere better informed, as to the structure of implements, the qualities of domestic animals, the value of manure, and as to the most approved processes of agriculture, than are the body of the farmers of Virginia. And yet, we find the Hon. A. STEVENSON, one of her most enlightened, patriotic, and justly distinguished citizens, in a highly instructive address to the agricultural society of Albemarle, says, "it can hardly be necessary to attempt to impress upon you the *depressed and wretched condition of the farming interests throughout the State at large*, with the exception of some few portions of it which constitute honourable and praiseworthy exceptions." Now, the question arises, one which no true Virginian will attempt to dodge or blink; *whence arises this "wretched and miserable condition of the farming interest throughout the State?"* For one, well as we know his zeal in the cause, and the fullness of his anxiety for all that concerns the welfare of his State, we must presume, with unfeigned respect, to differ with Mr. S. in the opinion he expresses that,

"In the first place, then, it has *mainly arisen*, from too great an indifference, I might almost say, total disregard, of modern scientific knowledge, connected with practical agriculture, foreign and domestic. From deep-rooted attachments to old habits of cultivation, descending from generation to generation, and from father to son, and which attach so many of our Virginia farmers with 'hooks of steel' to their ancient modes of cultivation."

Meetings of the same character have been held in various parts of the country, where gentlemen of superior intelligence and undoubted patriotism and public spirit of both parties, (how mortifying to speak of *party* in connection with such a great industrial question!) have maintained the same views, asserted the same evil and called for the same remedies. The naked truth is, that for a nation to make its own *blankets and cloths and iron*, is a question, not of a party, but of national independence, or (with us) of subjection "to the policy of British merchants."

Now, well as we know his zeal in the cause, the wide scope of his personal observation of the most improved husbandry at home and abroad, and the fullness of his anxiety for all that concerns the welfare of his State—in which

last sentiment we claim cordial participation—we must presume, with unfeigned respect, to differ with him as to the principal cause of the dilapidated condition of Virginia agriculture which he so vividly describes. We rather apprehend that the principal cause of its depressed and wretched condition, in that, as well as in too many other States—New York, Pennsylvania, and Maryland, included—is to be found in another passage of this interesting and instructive address, where the orator states, in speaking of America:—

“She has now more than fifteen, out of seventeen or eighteen millions of her population, engaged in agricultural pursuits—with no probability of its diminishing.”

Here, in our humble judgment, lies the great secret of the depressed and wretched condition of the agricultural interest of every State, and of every country, where the agricultural producers are in such enormous disproportion to their customers.

We had occasion, lately, to run a comparison between the growth and progress in population and wealth, of Massachusetts and North Carolina, for the last half century: by which it was seen, that the latter, having the start of Massachusetts, continued for thirty years to maintain her position ahead, nay to widen the gap between them; both going along at rather a slow pace, as long as the population of both States remained, in very large proportion, as it still does in North Carolina, *at the plough*, in the full proportion here stated by Mr. Stevenson. But, twenty years since, after three heats of ten years each, and when, against the vote of Massachusetts, the policy of the government was changed, tempting capital and labour from the plough to the loom and the anvil, she, with that pliability of genius and adaptability to circumstances which distinguishes the New England man; promptly occupied the avenues opened to her industry, even against her consent—and lo! what a change! In twenty years she has filled up the gap, which till then had been widening between her and the old North State, and now, at the end of this heat, in the year of our Lord 1850, instead of 127,000 of population *behind*, she will come out ahead of her large old sister—and that in spite of fluctuations in the tariff policy of the country, which, like occasional calms at sea, have left the sails of her industry to hang flapping against the mast. Even now some of her great branches of industry are wilting like corn in a season of sudden and severe drought—still the increase of her population, her railroads, her schools, her commerce, and all the signs of wealth and prosperity and power, since she commenced to draw the loom and the anvil close around the plough and the harrow, have been without example in the industrial progress of any people.

Now what resource or facility for manufactures does Massachusetts possess, that Virginia does not enjoy, two for one? Massachusetts has no coal, no iron, not much timber, no corn, no beef, no leather, with soil and climate greatly inferior; while Virginia emphatically abounds in all the elements of all the industries that breed *customers to farmers*. The highest priced wool in the northern factories, has been drawn from her mountains, in near proximity to coal, and iron, and wood, and water power, that ought to be spinning it into yarn and weaving it into cloth. The shortness of her winters, and the equanimity of her climate, secure to her flock an even pile and a heavier fleece than can be had where the growth is arrested by severe cold. And, from the fact, that there is for labour but the one channel, her mountains and valleys are filled with idle people, who would be working up her wool, putting money in their purses, and becoming good customers on the spot, instead of being a burden to her agriculture.

Wheat, at this time, is selling in Baltimore and Richmond at \$1 per bushel. When it brought \$1 10, General Jackson said to Doctor Coleman:

"I will ask, what is the real situation of the agriculturist? Where has the American farmer a market for his surplus produce? Except for cotton, he has neither a foreign nor home market. Does not this clearly prove, when there is no market either at home or abroad, that there is too much labour employed in agriculture, and that the *channels for labour should be multiplied*? Common sense points out at once the remedy—draw from agriculture this superabundant labour, employ it in mechanism and manufactures, thereby creating a home market for your breadstuffs, and distributing labour to the most profitable account, and benefits to the country will result. Take from agriculture in the United States six hundred thousand men, women, and children, and you will at once give a home market for more breadstuffs than all Europe now furnishes us. In short, sir, we have been too long subject to the policy of British merchants. It is true that we should become a little more Americanized, and, instead of feeding the paupers and labourers of England [as we do by sending there for her manufactures], feed our own; or else, in a short time, by continuing our present [free trade] policy, we shall all be rendered paupers ourselves."

Colonel John Taylor, of Caroline, the father of so much of the melioration which has taken place in the practical agriculture of the South, pronounced the opinion, that wheat would not pay, when its product fell below ten bushels. Now, we hope we "don't intrude;" but does Virginia *average* eight of wheat, or twenty of corn, or as many of oats? What, in short, is the per centage of profit on all the capital embarked in agriculture, according to a fair valuation, and how stands the account at the end of the year, of her aggregate capital and labour? Will some friend—say of the Albemarle Agricultural Society—let us know what is the general, or his own, impression? And we venture to ask, *currente calamo*, but most respectfully, the Delegates from each county now at Richmond, to confer and inform us at Washington, where we are residing, what is their necessarily rough, but impartial estimate, each speaking for their own county, of the supposed average acreable product in the various grain crops, and in tobacco, where that crop is cultivated? We shall endeavour to get at the same object, by the same means, in some other States. The result would be a valuable item in agricultural statistics, much more reliable than such estimates sometimes are. But to return to our subject.

Have not State Agricultural Societies been repeatedly formed and incorporated in Virginia and other States, under promising auspices, but ending in abortion, sooner or later, as they ever will, until aided by a wise course of general legislation, that will tempt millions of capital and of *men*, to come within her borders, there to work up, on the spot, the raw materials of industry which the God of Nature has bestowed upon Virginia in such profusion, and which, as He does nothing without design, He *designed they should use*. When men shall thus be drawn, by the assurance of remuneration to labour, to come and consume on the spot, the products of improved agriculture, *then* will come the science to improve. Only give assurance of \$1 50 per bushel for wheat, and 75 cents for corn, for the next ten years, and it will do more to retrieve the "depressed and wretched condition of the agricultural interest throughout the State," than all the science and all the agricultural societies that were ever brought to bear on the subject. Instead, then, of drawing off her population from agriculture, as General Jackson suggested, her farms will be divided and subdivided, because her sons will stay at home, the plough will be run deeper and faster, and her old maiden daughters, however respected and happy now, will become more useful to the commonwealth, as wives and mothers, where they have ever shone—even to a proverb. If, at this moment, she had a consuming population within her limits, in the proportion to

her people at the plough, that they have in Massachusetts, raising the price of her three staples,—wheat, corn, and oats—to what they bring at this moment in Boston, it would make to her, according to the statement of her products in 1840, a difference of five millions and a half of dollars in her income—enough, every year, at \$20,000 a mile, to build 275 miles of railroad—and, enough to put up in Richmond in two or three years as many cotton factories as there are in Lowell.

These frequent well meant, but fruitless attempts, to redeem the agriculture of States so expanded and so blessed with glorious natural advantages, merely by the formation of Agricultural Societies, and by the offer of small premiums for individual success in particular cases, place them in our view, in the light of a strong resolute man, contending blind-fold against invisible enemies, thrusting at his vitals. No! The disease is too “desperate grown” to admit of removal by any such superficial appliances—Virginia may rely on it, she will never improve her agriculture, thicken her population and augment her power, as with her resources she ought to do, while she leaves such water-power as that at Richmond, and at the great falls of Potomac, unoccupied, her furnace fires to go down, her coal lying in the pits, where Providence placed it to be delved and used—she must insist on a policy that will force the light and comparatively cheap machines of conversion, to come and do their work on the great machine of production; the men who build Farish’s fine post coaches, and her steamboats, and make her axes, and ploughs, and spades, and hoes, must be tempted to come and build and make them out of her own timber and her own iron. The men who make her shoes, and her saddles and bridles, must be tempted to come and make them out of her own leather, from her own hides, with her own tan bark. She must agree that our tariff policy shall make it the interest of those who, in England, manufacture her iron and her cloths, shall come with their capital and their skill, and manufacture them with her own coal and ore, and with her own wool, for which she has unoccupied pastures fitted to supply millions of pounds of all, and *especially* of the finest qualities: and while they are thus making within her borders, out of her own materials, the iron and the coaches, and steamboats, and shoes, and saddles and bridles, and cloths, she will be supplying them with their clothing and food, of which last, the produce of the labour of the down trodden serfs of Europe, a very large proportion of the manufactures she now imports, *are actually composed*—of pig-iron for instance, as we see by the Report of the Baltimore Iron Masters, in this number of *The Plough, the Loom and the Anvil*, the raw material on the ground—the coal and the ore, make \$2 or \$3—the rest of the cost, say \$20, being composed of the produce of the plough and the harrow, the hoe and the axe. Instead of upholding a policy that would in a few years, if steadily maintained, as the permanent system of this country, lead to all the most glorious results, in the growth of national wealth and power, behold us advocating a system under which, the Baltimore and Ohio Railroad, by a single scrape of the pen, sends “home” to England, for as much railroad iron as, if made in the United States, would demand for its manufacture more than a million of dollars of agricultural produce. True, to her credit be it said, giving hope of redemption, Virginia has lately taken some promising measures in the right direction, by appropriations for surveys and railroads; but railroads, creative and beneficial as they are (and to which the government should rejoice at any opportunity to contribute indirectly, instead of higgling about mail pay), they are yet mainly useful and profitable to agriculture, *our* only concern, chiefly as they afford channels for conveying the products of various industries, that serve to make a market for the natural and artificial products of *the land*! No railroad would ever be needed or pay, as a means of transportation and intercourse, between agriculturists alone.

Take a single glance, at her tide-water counties! Do they stand in need of cheaper transportation? What human contrivance can surpass the canals which nature has provided for all eastern Virginia? Why is it then, if there be not some other source of rottenness in the State of Denmark, why is it, that paralysis seems to have fallen even heaviest on that portion of the commonwealth? No! she wants that *diversified employment*, which concentrates population, drawing the manufacturer to the side of the agriculturist, creating on the spot, a demand for which no rural product is too large or too small—from tons of cabbages and potatoes down to pounds of butter and pints of blackberries—For the wants of protected industry, under our institutions and with our resources, nothing that can contribute to human or animal sustenance would be too heavy or too light to be absorbed by it. Like the elephant it would turn from lifting a bale of cotton or a hogshead of tobacco to pick up an apple or an egg. Of all the States of this Union, Virginia, near and accessible as she is, at all seasons, to immigrants from Europe, ought to be among the first to put down her foot and say; for not *one dollar's* worth, for which we have the materials, will we go to foreign countries! In the essays of Mr. Carey, published, and to be published, in "*The Plough, the Loom, and the Anvil*," the effect of such a policy on every public interest, and every branch of industry, has been most thoroughly exposed to view, and so illustrated, even by diagrams, that he who runs and *can't* read, may yet understand it. It is there not merely stated but *proved* that, with protection, always comes increased power of consumption, with augmented importation, immigration, and revenue. That, in fact, and beyond all dispute, every branch of American industry, commerce among the rest, invariably thrives under a protective, and as invariably declines under a free trade policy. There is no exception. It applies, as he demonstrates, to iron, coal, cotton, wool, shipping, steamboat-building, house-building, national revenue, and credit, in a word to everything. He who doubts *is challenged to read!* We have no party to defend, no theory to uphold—we seek only the truth *for the benefit of the planter and the farmer.*

What, let us ask, are the obvious considerations that should lead the Virginia farmers to rejoice at high wages and prosperity to the labour, employed in *our own country at all the other pursuits?* Why, obviously because that condition of things offers a resistless temptation to the not half-paid, and more than half-starved operatives in the manufactories and workshops of Europe to come, not single or in pairs, as house flies, before invisible, are quickly seen to come from all quarters, to a pot of honey; only assure the foreigner of full wages at manufacturing and mechanical pursuits, and you will see them come, as they ever have come, under a protective policy, by *shoals and in thousands*—and when *they do* arrive, what then? Why then, instead of going off to follow the plough, on cheap lands in the west, as men bred exclusively to agriculture would, in search of subsistence, by the only occupation with which they are familiar, these countless swarms of immigrants would remain on the seaboard to eat the products of the plough, and with increased demands, would come, as through all nature does come, increased supply! even the supply of "modern scientific knowledge of practical agriculture." In vain shall we exhort men to acquire the scientific knowledge to make more, when, what they do make, *won't pay!*

Virginia now wastes in idle labour, and in wagons and horses, travelling over long and bad roads, more in the work of sending away her products to be exchanged abroad, for what she gets in return (all of which she might make at home), more than would build all the lighter machines of conversion within her own borders.

Finally, let those in Virginia, who share in controlling the policy of go-

vernment, as respects its industry, ask themselves a few plain simple questions, as for example:—

Even supposing the labourer of Europe to be a consumer of American agricultural products (which he is to a very limited amount, unless in time of occasional famine), where would he consume most? As a famishing, half-starved, half-paid labourer abroad, or as a thriving, prosperous, well-paid, well-fed freeman here in our own country? and again. What economical temptation has Virginia and her policy ever held out to the immigrant to go and settle within her borders, except the natural advantages of her glorious climate, and the social attractions presented by the generous and hospitable qualities of her people?

What employment does she offer to the capitalist or the manufacturer? Hence, of the millions who *are* coming to our shores, how many *dozen* settle in the old dominion? But let her unite in insisting on a course of legislation that will protect American industry, and turn labour, as General Jackson suggested, and, as is systemically inculcated in "*The Plough, the Loom, and the Anvil*," into other channels, and in ten years, her great railroads would be completed, and every trunk thereof, would shoot off its branches to thriving towns, around her mountain cascades, and in their valleys, as they do in New England. Norfolk and Richmond, then thriving like New York, and Albany, and Boston, and Lowell, would have their steamboats and regular packets, and tobacco ships, coming directly into the Chesapeake with thousands of immigrants from Europe, to enjoy the superior advantages of their soil and climate, and we should no longer hear, as now, the voice of the eloquent patriot lamenting "*the depressed and miserable condition of the agricultural interest throughout the State*." An agricultural convention to form societies is *not the probe for such a sore!*

P. S. The preceding reflections came, from seeing in the *Southern Planter*, a proposition to hold another Agricultural Convention at Richmond, on the 20th of this month. We venture to propose, respectfully, that when they meet to consider how they can best redeem her agriculture from the depressed and wretched condition in which it is said to exist, throughout the State, they appoint *two committees*, with instructions to consider and report—

1. The best means of securing, as near as possible, to the plough, a market for the products of the plough: and,

2. A memorial to the Legislature to establish a *Bureau of statistics*, with such facilities and power as will enable it, not only to report, at all times, on the products of the State, but to explore and develop its capabilities, natural and artificial, for keeping pace with her sister States in the progress of wealth and power, in a manner commensurate with her superior advantages.

WE tender our grateful acknowledgments to Mr. Seaborn, of New York, a large paper manufacturer, with whom we have not enjoyed the pleasure of a personal acquaintance, for \$50 worth of beautiful paper, contributed by him for *the good of the cause*. We only wish he had 10,000 men employed, with profit to himself, and at such wages as would enable each man to consume a stack of wheat, a fat bullock, a south down mutton, a firkin of butter, a hog-head of milk, a ton of potatoes, and a thousand other of the products of the farmer every day. Even if they *could afford* to drink a bottle of champagne every day (we don't exactly recommend it, being ourselves teetotallers for sanitary reasons), but how would it injure the farmer if every manufacturer and mechanic could consume dollars where they now demand cents worth of his produce? It is for *his* sake that we desire to see every industry flourish! and the loom and the anvil draw prosperously and close around the plough and the harrow.

ON THE POWER AND USE OF NEW ENGLAND OXEN.

SOME jokes have passed between us and a friend of ours, about the weight hauled by Worcester County oxen, on their trials in Salem Street, Worcester, at their annual cattle shows—some of which we have had the great satisfaction to witness.

We applied to the excellent secretary, Mr. Lincoln, for exact information, and his answer shows, as in all such cases, how these New England men “do up” everything they put their hand to.

He sent us a diagram, very neatly done by an engineer, showing the exact inclination of the hill, from start to pole.

We made, at the same time, some other inquiries, to all of which, Mr. Lincoln replies:—

“The weight of the load is 4000 lbs., including the cart; it was formerly 5000 lbs., but it was thought to be too heavy for the smaller cattle,* and that the training of the cattle was as well exhibited by the management of a lighter load, the weight was therefore reduced to 4000 lbs., at which it has remained for several years.

“The usual calculation for the work of a yoke of oxen, in ploughing sward-land, is one acre per day—many of our oxen do more. This work, which is done in the spring of the year, is usually before the cattle are turned out to pasture, which, with us, is not usually earlier than the 20th May. Their food is commonly dry hay, without grain; but some of our best farmers give their oxen about two quarts of corn cob meal per day, but few, however, do this. The work by oxen through the summer and autumn is usually on grass alone. Our work on our farms is almost wholly done by oxen, and will, doubtless, so continue. On almost every farm a horse is kept, to convey the family to church, occasionally the children to school, and, on the road, to convey the butter, cheese, and other notions to market, but is not much used on the farm, except with the horse-hoe and cultivator.

“Respectfully yours,

“JOHN W. LINCOLN.”

How often, when a boy, alas! long time ago! in Calvert County, have we seen three span of oxen hauling one light hogshead of tobacco, to the warehouse, in old Huntingtown, to be inspected by “*Inspector Jimmy Skinner*,” (as honest a man as ever trod shoe leather,) the planter’s man taking a whole day to do, with three yoke, what a New England man would do with one in three hours. Ah! how precious time and force become, where men have a market at hand, and every one feels that minutes are but the “golden sands of time!” Thus everything inculcates diversity of employment and concentration of population. “*Two men can lift a log, that one can neither lift nor roll.*”

Malt v. Barley.—Your correspondent, “P.,” says, “Malt for feeding purposes has been proved by abundant experiments to be of no value.” “W.” asks for information. I fattened three pigs, one on barley-meal, one on malt, and one on a mixture of from one-sixth to one-fourth of malt to barley-meal; in each case the meal was mixed with water for some days before being used. I did not keep any account of it, nor was I very particular, but I saw enough to satisfy me that the barley-meal by itself fattened the pig sooner and better than the malt by itself, but that both of them separately were very inferior to a mixture of the two. Malt is at present at too high a price for me to try experiments with, but “W.” can try it.—A. K.

* They have sometimes hauled two carts up the hill, one hitched to the other. The practice at Worcester is to turn round and back up the same load.

REPORT OF EXPERIMENTS IN DEEP PLOUGHING.

BY MR. SINCLAIR SUTHERLAND, DALMORE FARM, ROSS-SHIRE.

[Premium, the Gold Medal.]

THIS subject of deep ploughing was, as far as we know, first and most emphatically brought into general notice in this country, by an able pamphlet, written by a plain, clear-headed, able man—THOMAS MOORE, of the Friends' Society, of Montgomery County, Maryland. It deserves to be re-published, although the seed it scattered have been spread by the force of types, and have taken root far and wide. His practice, after all, is to be pursued with some discrimination. To the American farmer, so deficient usually in capital and force, the expense it involves presents some difficulty; while some judicious farmers say it is not to be recommended indiscriminately *for all kinds of land*.

What the author of this prize essay says about its tendency to *compact light land*, is well worthy of notice.

If any of our readers object to *prize essays like this*, because they are founded on English observation, research, and experience, will they please let us know?

In the autumn of 1844, the reporter being strongly impressed with the advantages of deep cultivation on land naturally dry, or that had been thoroughly dried by drainage, resolved to subject a field of 45 imperial acres, on which green crops were to be grown the following season, to the operation: but as the reporter had not himself tested the matter, and as he did not know that ever it had been tested, on a soil and subsoil similar to this field, it was thought imprudent to order new ploughs. However, five common ploughs were sent to the smithy; three of these were made fit for casting a larger furrow than was previously required of them, and the other two had the mould-boards *drawn in*. The strongest of the *wide-set* ploughs was put to work with three horses, reaching a depth of 10 inches. The other ploughs wrought in pairs, the wide-set ploughs going first, turning a furrow of 6 inches deep, followed by the close-set ploughs, which penetrated a further depth of 6 inches. In this way the field was ploughed in the autumn of 1844.

The field had never before been ploughed to a greater depth than 7 inches, and consequently the subsoil was found in every place *very hard*. The land had previously been wrought in a regular rotation, and was in good condition—yielding fair, but not large crops—always failing with continued dry weather; indeed, as turnip, barley, and grass land, this was its only fault. It contains little or no *alumina* (clay), consequently has not power to retain sufficient moisture for the nourishment of plants, when rain is long withheld.

In the spring of 1845, 6 imperial acres were sown with beans, in drills 26 inches apart—a liberal dressing of rich manure, as well as a sprinkling of guano, having been applied. The result was straw five feet long, and 35 quarters of most excellent quality of beans.

Sixteen acres were planted with potatoes of different varieties, in drills 28 inches apart, a good allowance of manure having been afforded. The produce was not measured, but in almost every instance the crop was very satisfactory.

In due season the remaining 22 acres were prepared for Swedish turnip. The land being thoroughly cleaned, about 20 tons of manure from feeding stock, and 2 cwt. of guano, were applied to the imperial acre. The result was 24 tons (240,000 pounds) per acre on the average, exclusive of tops or tails.

These results were so entirely satisfactory, that the benefit on such soil of deep cultivation could not be doubted. To obtain almost 6 quarters per imperial acre of beans, from land that until now no one ever thought of trying

beans upon, and a greatly increased return of potatoes and of turnips, being at least a sixth in each case, were positive proofs of the benefits arising from deep cultivation, at least as far as green crops were concerned. It now remained to be seen what the succeeding corn crop would be.

It may be necessary to describe in detail the management of the land after the crops were removed.

In March, 1846, the whole field was ploughed 7 inches deep, and in the following month sown with common barley. The produce was on the average 6 quarters to the imperial acre, of first-rate quality of grain, being at least 1 quarter per acre more than ever the same land grew before in one season, with proportionate increase of straw.

As there was now a certainty of the profitableness of deep cultivation on this farm, trench-ploughs were ordered of the Messrs. Scouler & Co.; and your reporter resolved to conduct comparative experiments, and to report the results.

It will be proper to describe the nature of the land now about to be acted upon—and every remark which applies to it, applies with equal truth to the land already reported; indeed, both are equal divisions of exactly the same sheet of land, each division being 45 acres.

The land lies about half-a-mile from the sea, and from 40 to 50 feet above its level—is of a sandy loam, with, in every place, an abundant admixture of stones—the subsoil being sand, or sandy gravel.

The soil over about 30 acres is from 12 to 18 inches deep; 10 acres not exceeding 9 inches, and the remaining 5 acres not more than 6 inches deep—these last consisting of the highest points of the field. The entire field is naturally perfectly dry; indeed, water is never seen on its surface, except with a sudden thaw after hard frost.

In the autumn of 1846, 6 acres were marked off in the most equal part of the field, in *three* divisions. Two acres were, with 2 horses, ploughed to the usual depth of 7 inches. The other 4 acres were trench-ploughed, with 4 horses, to the depth of 14 inches. The soil below the usually cultivated depth was very solid, parting from the bottom *as if torn asunder*; but there was no pan.

In the spring of 1847 this piece of land was well harrowed, and the weeds which were brought to the surface were carefully hand-picked; and later in the season the land was cross-ploughed, well harrowed, and thoroughly cleaned. Two acres of the 4 which were trench-ploughed, had 30 bolls of lime, of 40 gallons to the boll, applied in a hot powdery state, and immediately afterwards harrowed in.

This piece of land being intended for Swedish turnips, drills were opened 28 inches wide, and 20 tons of most excellent manure, from stock fed largely on artificial food, as well as farm produce, applied, along with 2 cwt. of Peruvian guano, to the imperial acre. The manure was immediately spread, and covered by the plough, followed by the sowing-machine, depositing about $2\frac{1}{2}$ lbs. of seed, of Skirving's purple top, to the acre. This was on the 2d and 3d of June.

The weather being exceedingly favourable, the plants very soon made their appearance, and finer braird was never seen, there not being on any part a foot of a blank. The braird on the 2 acres to which lime had been applied, and which were not sown until the afternoon of the 3d, was out before that of the deep-ploughed land sown the same *morning*, and also before that of the shallow-ploughed land sown the *previous day*. This no doubt arose from the lime disengaging gases from the manures and soil, which warmed the latter, and afforded early nourishment to the *embryo* plant.

Early in July, the 6 acres were hoed 10 inches apart, and after that period

the crop on the limed land did not show greater luxuriance than the crop on the deep-ploughed land, to which no lime had been applied; both, however, were more bulky than that of the shallow-ploughed land, and this continued throughout. In due season a second hoeing was given, and in the autumn the whole were drilled up, to preserve them from the winter's frost.

On the 1st of April, 1848, the crop was cast out by the ploughs, an imperial acre of each of the three differently treated portions being measured and staked off. The tops and tails being removed from the bulbs, the latter were filled into the carts, and the entire quantity weighed in loads on a steelyard, with the following results:—

Treatment.	Produce per imperial acre.				Excess produce per imperial acre.			
	Tons.	cwt.	qrs.	lbs.	Tons.	cwt.	qrs.	lbs.
Trench-ploughed and limed	27	18	2	0	6	6	1	7
Trench-ploughed	26	6	0	14	4	13	3	21
Shallow-ploughed	21	12	0	21				

The land was harrowed quite level, the *shaws* being left on the surface to be ploughed in as a manure; which, on soil of this description, very deficient in vegetable matter, is found good practice.

The six acres were ploughed 7 inches deep, and on the 1st of May were sown by the same hand, with 3 bushels and 1 peck of common barley to the imperial acre—the land being immediately *thoroughly harrowed and rolled*.

The braird came away freely, looking remarkably healthy, and equal all over the three portions; and up to the time of cutting there was not any difference observable, except that, when coming to maturity, the crop on the shallow-cultivated land had a *greater lean-over*, showing that it was less able to support the crop than the deeper-cultivated land.

The whole being equally ripe, was cut on the 8th of September; and highly favourable weather succeeding, the corn and straw were in the very best possible condition for leading on the 18th, when the entire quantity grown upon 3 acres—an acre of each kind—was weighed in loads as brought from the field, and at once put into the loft to be thrashed, each differently treated portion being kept distinctly separate.

The object of weighing the crop as brought from the field was to save labour, as it only remained to deduct the *weight* of the dressed barley from the *gross weight*, and the balance, of course, was the weight of the straw and chaff.

On the 20th September the whole was thrashed, dressed, and measured, and the following results obtained—*per imperial acre*:—

TREATMENT.	Produce of Grain.			Produce of Straw.		Weight per bushel	Excess produce of Grain.			Excess produce of Straw.		Light Barley.
	qrs.	bsh.	pks.	sts.	lbs.	lbs.	qr.	bsh.	pk.	sts.	lbs.	pks.
Trench-ploughed and limed	7	0	2	260	0	57½	1	0	0	5	9	2
Trench-ploughed	6	7	2	261	8	57½	0	7	0	7	3	2
Ploughed	6	0	2	254	5	57½	—	—	—	—	—	2

The reporter is decidedly of opinion that, had the season been hot and dry, instead of, as it was, cool and moist, there would have been a greater difference in favour of the trench-ploughed land; this is asserted from the experience of former years, in which both green and corn crops withstood continued drought after deep ploughing, when formerly, with dry weather, a failure was inevitable.

The expense of trench-ploughing old cultivated land may be set down at a

half more than common ploughing; where there are many large stones interrupting the progress of the plough, and also a hard subsoil, the expense will be *more* than a half. Let no man think of trench-ploughing his land without giving his horses plenty of the best food.

The horses are yoked two and two abreast, the foremost two drawing by a strong chain from the muzzle of the plough. A boy accompanies each plough, attending the front horses, managing them at the turnings, and placing a *mark* wherever a large stone is found, for the purpose of the latter being taken out by the men who follow, so that there may be no future interruption to deep cultivation.

The writer's experience only refers to trench-ploughing before green crop; and the land in spring is *always harrowed* before cross-ploughing. This serves two good purposes; the weeds which may be brought to the surface are removed, and the horses have a *firmer footing* for cross-ploughing.

The rotation practiced on this farm is the seven-course, viz: 1. Beans, tares, potatoes, and swedes. 2. Wheat or barley. 3. Turnip, partly eaten off. 4. Barley, with grass seeds. 5. Hay, or pasture. 6. Pasture. 7. Oats. So that the land will continue to be trench-ploughed *twice* every seven years.

The practical conclusions to be drawn from these experiments are:—

First. That deep ploughing increases the produce of both green and grain crops: and this the reporter states not only from what these experiments point to, but from having grown green crops, after trench-ploughing, on 180 acres, and grain crops on 135 acres of land, with uniform success.

Second. That trench-ploughing tends to *firm* or *consolidate* light land. This is stated from the fact, that on walking across the stubble-field the writer felt the shallow-ploughed land more loose than the trench-ploughed land; and this is also supported by the fact already stated, viz: that the crop on the shallow-ploughed land had a greater lean-over than the other, while the quantity of grain was less; showing that, however forced, it is impossible on weak light land to grow very large crops without deep cultivation, as the mechanical texture of the surface cannot support beyond a certain quantity.

Third. Deep ploughing will always require to be *well harrowed and rolled*, as it is only by these means that a *uniform compactness* can be attained.

RANDALL'S BOOK ON SHEEP HUSBANDRY.

Opinion of MARK R. COCKRILL, ESQ., of that work, and of "The Plough, the Loom, and the Anvil"—The gad-fly of Sheep—Error as to its habits, in an important particular of its natural history, corrected.

Mr. Cockrill is admitted to be eminently well-qualified to pronounce judgment, on any practical subject, to which he directs his attention.

Nashville, December 30th, 1849.

DEAR SIR:—I have just returned from Miss., and find your valuable letters. I am gratified to have it in my power to say, that I have carefully examined H. S. Randall's work on "*Sheep Husbandry*." I am fully prepared to say, it is the *very best work* that I have ever been able to get hold of, either European or American. I must say, with my long experience and close application to this important subject, I find no difference in opinion between him and myself, excepting as to the gad or sheep-fly. He, and all other writers that I have seen, state that that fly deposits an *egg* upon the sheep's nose. They have not looked closely to this point, for it deposits its young *alive*, and ready to run instantly up the cavities of the sheep's head.

Those who wish to know the truth have only to catch this fly and dissect it, and they will find hundreds of young alive, and ready to run—many in

one fly. Many diseases originate from this fly. I may at some future day give, when I have more leisure, a full history of this particular evil. In this country the dogs, and this abominable insect, are almost the only drawbacks against this important and beautiful pursuit. I have recommended Col. Randall's book to every person that applies to me for information upon this subject. Every person in the country, that has a flock, should read and study this work.

I have scribbled this off in the night, and cannot see. Please pardon me, as I cannot write more.

Yours, with great esteem,

MARK R. COCKRILL.

P. S.—I have not had time to select any samples, but send two to give some idea of my wool—eight months' growth. *Every man in the United States ought to read "The Plough, the Loom, and the Anvil."*

EDITORIAL CORRESPONDENCE.

The run of the mail for a day or two.

Birdsville, P. O., Burke County, Ga., 30th December, 1849.

My Dear Sir:—According to account rendered, I inclose you my arrears for subscription to "*The Plough, the Loom, and the Anvil*," from 1848 to June 1850, inclusive, six dollars (\$6), also five dollars (\$5), for two other subscribers, with the hope that I shall make up a number before the lapse of another year.

Please send back numbers to the following gentlemen, ——— and ——— who is one of my nearest neighbours, and one of the wealthiest planters in the county, and has represented us many years in our State legislature.

Permit me, my dear sir, to congratulate you upon the return of another year, and with an earnest prayer to Heaven, that your life may still be spared to see the great interest which you have advocated so long and so truthfully as well as faithfully, regarded with that merit which it deserves in the national councils of our country. May you receive also, while living, if not in full, at least payment in part, of the debt of gratitude which the agriculturists of America owe you, but which perhaps you may never get, until posterity foots the balance sheet.

I have just read with pleasure, as well as pride, that portion of President Taylor's message in relation to the claims of the agriculturist upon the consideration of all great and good men. I hope it may be the omen of brighter and happier days upon the industrial classes of our country. Shall we have another congress of the representatives of a great and free people without action upon this subject.

May not he who has laboured at one cause without ceasing, for more than thirty years, in bright and fortunate, as well as in adverse and gloomy days, with all his abilities, such as God has given him, be excused for thus recording (if only for the gratification of those nearest to him, who are to come after him) such evidence of generous and honourable sympathy and kind feeling, as is evinced in the foregoing? What reader would withhold the privilege from one who, now on the wrong side of sixty, finds himself necessitated to labour harder than ever to keep afloat. *Such is our case.*

CORN, COB, AND SHUCK CRUSHERS.

To the attention of implement manufacturers—who, as a body, deserve to be regarded as eminent benefactors of agriculture—we respectfully recommend the following: We are not aware that any one has, heretofore, called for a crusher, that would grind up the *shuck*, or covering of the ear, along with the grain and the cob. That such a thing would be very desirable, there can be no doubt, for we believe the shuck to be nutritious, to a degree not generally known. Governor Sprigg, of Maryland, reserves them as a favour to his *milk cows*. Strange to say, we have heard sensible farmers maintain that they are the better, as indicated by their being eaten more heartily, when they are *slightly moulded*. Is it that, like malting, it amounts to a sort of fermentation?

Agricultural implement makers are invited to a correspondence on the subject of agricultural machinery, generally.

Gallatin, Hends Co., Miss.

You very often have advertised farming utensils. I think the notice of them is too indefinite, as it regards what I have been on the lookout for, or the kind that I want, have not found a place in your list.

I want a *corn crusher*; one that would grind cob, corn, and shuck, into food for horses and oxen. I have seen two kinds, but neither embraces the mixing the shuck. One of them has not sufficient stamina to know how the other may operate; trial has to demonstrate. As a special favour, when you write, please give me any information you may have on the subject. I flatter myself that you will take a pleasure in enabling him to carry out anything like economy, especially in these hard times for the South, for we have come nearer a failure in corn and cotton than we ever have.

Yours, truly,

H. W. S.

JOHN S. SKINNER, ESQ.

"ELEMENTS OF AGRICULTURE."

RECOMMENDED—WHERE IT MUST GO—FOR USE IN THE COMMON SCHOOLS OF THE COUNTRY.

Newton, Sussex County, N. J., January 17, 1850.

J. S. SKINNER, ESQ.—*Dear Sir:*—Enclosed please find five dollars (\$5), for which I wish to obtain "The Plough, the Loom, and the Anvil," Vol. I. and Vol. II., so far as published, and the remaining numbers for the current year when published.

Accept my thanks for your kindness in forwarding the "Elements of Agriculture," in September last. I have a high opinion of it, and, in a report made Jan. 1st, inst., to our County Educational Society, recommended its introduction into the common schools.* Wishing you all prosperity in your efforts to ameliorate the condition of the farmer, I am most respectfully,

Yours, &c.

CHARLES M. HALSTED.

Post Office, Chillicothe, Ross Co., Ohio, January 16, 1850.

SIR:—"The Plough, the Loom, and the Anvil," addressed through this office to Gen. J—— W——, he refuses. You will therefore take notice, all numbers sent to his address in future will be *sold for postage!*

Respectfully yours, WM. C. DOUGHERTY, *Asst. P. M.*

J. S. SKINNER, ESQ.,

No. 79 Walnut Street, Philadelphia, Penn.

This reminds us of an anecdote, told by our friend Whittlesey, that an unfortunate merchant, who had been compelled to "take the benefit," was travelling in the west to sell goods on commission. He happened to display them to an old creditor, who produced his own note, and offered to take goods in payment. "Oh no," said the merchant, "they are not mine." "Very well, if you don't pay your note, I will put it in the fire and burn it up before your face." "Oh, surely you would not so disgrace me?" "Yes, I surely

* Three gentlemen—one in South Carolina, one in New York (the Hon. C. E. Clarke), and one in Delaware—ordered, the first 50; the second 50; and the last 75 copies for gratuitous distribution.

will burn your note, if you don't pay it." The merchant was so deeply distressed at the idea of such an indignity, that he *actually contrived to take up his note!* Now, we are really afflicted at the idea of *The Plough, the Loom, and the Anvil*, on which we bestow so much of our poor brain-labour, (and for which we pay, every month, "cash as we go,") being *sold for postage!* Why, it often happens that, before we can get back numbers reprinted, to make up an entire volume, wanted at the instant, we would give three prices for a single number. Won't some friend in the neighbourhood of Chillicothe save us from the threatened indignity? However, we will stop the paper on this, the first notice we have received, though seven numbers have been sent. Assuredly we don't want to force the work on any one. All we ask is, punctuality from those who do take it, and the kind assistance of those who wish to further the progress of sound opinions, on the true sources of agricultural prosperity, for every country. But here follows "a horse of another colour:"—

Cove Forge, January 13th, 1850.

DEAR SIR:—The subscription of Schmucker & Wampler to "*The Plough, the Loom, and the Anvil*," ended, I believe, a month or two ago. You will please give me credit for another year's subscription, or rather, mark me down as a "life member," and direct hereafter to

JOHN G. SCHMUCKER,
Williamsburg, Blair county, Pa.

January 15.

After writing the above, I concluded, as you suggest, to endeavour to get others to unite in subscribing with me. It was my first attempt at soliciting subscription, and was a tolerably successful one. I find that all "*The Plough, the Loom, and the Anvil*" required to secure it a general circulation among the iron manufacturers of our State is, that they should *see it, and understand the character of the work.* (Here follow five names.)

The names of the men I send you are among the most intelligent and influential in our county, and will exert themselves to extend the circulation of your work.

Respectfully, yours,
JOHN G. SCHMUCKER.

But here, good as all is (except the *slow* notice from Chillicothe), we reserve, as in a lady's letter, the best for the P. S.

Port Gibson, Miss., January 3d, 1850.

JNO. S. SKINNER, ESQ. *Dear Sir:*—Enclosed you will find \$15, which please appropriate as follows:—

Here follow the names.

The above are all new subscribers, and their addresses are all to this Post Office.

The other \$5 enclosed, was handed me by "*Dr. J. P. P.*" of our town.

I doubt not that I should have been able to send at present a longer list of subscribers, had I not been absent for the past two weeks on a visit to Lake St. Joseph, La.; whither I went to enjoy the delectable sport of *duck hunting*, of which we Eastern shore men are proverbially fond. One who has not visited the interior waters of Louisiana can form no idea of the immense quantities of water-fowl which resort thither in the winter season. A seat in a skiff upon the placid waters of the Lake, with a genial atmosphere, the reverse of that which freezes the nose and feet of the Northern sportsmen, and with ducks of almost every known, and of some unknown varieties, filling the air with the noise of their rapid flight, form *material* enough, one would think, to gratify the most ambitious sportsman; but to complete the picture

of hunting in Tensas (the parish in which this Lake is situated), you must add the droves of lordly deer, and troops of wild turkeys, which roam her forests and find shelter in her dense canebrakes, and also the immense droves of wild geese which fill her corn and pea-fields. From all these we exacted ample tribute, and returned, after an incessant hunt of ten days, to our homes and business, with renovated strength and spirits, and pleasant recollections of our Christmas hunt.

But "*revenons a nos moutons*," as our French friends say, I am happy to say that the principles so ably advocated by "The Plough, the Loom, and the Anvil," are rapidly growing in public favour here, and that *interest* will soon ripen into *action*. A great change in public sentiment has been produced, and our planters are beginning to understand the *true* policy of the South. We have recently had established here, by an industrious and skillful Ohio mechanic, a plough and wagon factory. His *immediate success*, and the superiority of his work over that heretofore sent here by irresponsible *northern* men, have had a very favourable influence.

Another individual from the same State will, probably, soon open an extensive carriage manufactory here, and we shall doubtless, soon have *tanneries*, manufactories of coarse shoes, &c., and *a plan is now maturing* for the establishment of an extensive cotton and wool factory. All these we *will* have, and their success cannot be doubted.

No speedy change can be effected in Agricultural pursuits here, indeed, I fear that the present *temporary* high price of cotton will greatly retard it, but the change *will* come at last. When manufactories here shall *draw around them a consuming population*, much of our exhausted land, now yielding but scanty crops of cotton, will, under a different system of culture, yield food, in abundance. He who has noted the increased value of lands formerly worn out by tobacco culture, but now enriched by the establishment of *factories* in *Maryland*, can form an idea of what will occur here, where like causes must produce like results.

Sincerely wishing your continued health and increasing prosperity, I remain,
Truly yours, WM. H. JACOBS.

—, Georgia, December 25th, 1849.

DEAR SIR:—Enclosed is three dollars for my subscription for "The Plough, Loom, and Anvil." I have not seen lately my friends who were so kind twelve months since to join me in a subscription to your periodical. I therefore send my own, and, if I can, I shall try and send you a club subscription before long. I advise every man of respectability to take it. Though many at the South object to and "abhor" your doctrines, I am one who has investigated for myself and cast off prejudice, and agree with you. Therefore, success to your doctrines, and especially to your personal success.

Very respectfully,

S. R.

☞ The reader will please look at the whereabouts of the above. We get many such. Why do not those who "abhor" our "doctrines" refute them, if they can? Have we denied place or hearing to any one? So we too, are, like those who abhor our doctrines, in favour of "free trade," but not that free trade which means subserviency to "the policy of British merchants"—that free trade that, before it can be enjoyed on equal terms, requires the American labourer, at all the pursuits which make a market for the farmer and planter, to be reduced to the wages and degraded condition of the labour of European governments which we every day denounce as tyrannical and oppressive. Why boast of our Republican government—what is its use—if it does not elevate the physical and moral condition of its industry above that of the serf of Russia, the fellah of Egypt, and the starving labourer of Ireland?

The Plough, the Loom, and the Anvil.

VOL. II.

MARCH, 1850.

No. IX.

THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

WHAT! more of the political economy of the Plough? Yes, reader, more; for the subject is a grave and comprehensive one, not to be despatched by that sort of legerdemain which we see practised with the high-sounding "Resolutions" taken ready cut and dried in his pocket, by the party bell-wether to the political caucus, to be presently reproduced and proclaimed as the quintessence of patriotic deliberation! No! the topics here discussed involve the very foundations of agricultural and other industrial pursuits—topics in reference to which the wisest men have been divided into schools, each advocating systems diametrically opposed, and under which, as the one or the other prevails, the very business of your life must flourish or decline.

Believing sincerely that it would not be possible to overrate the importance of the facts arrayed in these essays, and the arguments, based upon them, kindly and gratuitously prepared for this journal at the cost of much labour, how could we suppress the desire that you, too, should enjoy and walk in the light that has revealed and is revealing to us the state of the whole question; showing incontestibly how all the great branches of American industry are dovetailed into each other, to be advanced or retarded together?

What would justly be said of the farmer, who, having discovered an infallible preventive of the turnip-fly or the potato-rot, should withhold it from the knowledge of his neighbours, under the pretext that they would be unwilling or too indolent to understand or to practise it? Just so might it be said of us, were we not, with such means as are here placed within our reach, to persevere in laying down, for readers who have the ambition to inquire and to think for themselves, those doctrines in the political economy of agriculture, which in our heart we believe to be much more indispensable to its general melioration than would be the knowledge merely of a remedy against any casual evil or incidental calamity. Even societies, and cattle-shows, and premiums are to be looked upon merely as powerful accessories, not as principals in well-founded plans for the improvement of a great branch of national industry. As for any arbitrary imputation of *party* motives or objects, we equally repudiate the suggestion and the thought of it. Enough to repeat, that not in this journal, if anywhere, do we belong to any party. Yes, there is a party to which we confess to owe fealty—the party in favour of the diversification and prosperity of *American labour*—in favour of seeing the loom and the anvil thriving in the midst of *our own* ploughs and harrows. Thus much has it been deemed proper to say here, introductory to a continuation of these essays, promising that, as they will run yet through several numbers, the residue of each, (sometimes adding a number of pages, as in the last and present numbers,) shall be appropriated to practical matter—*practical* forsooth! To whom is it of more practical consequence than to the cultivator of the soil to understand thoroughly what has been and will be laid down in these dissertations? We are told, for example, by the advocates of the "free-trade" system, with a pertinacity that has invested it with all the force of some other dogmas equally unfounded, that *protection is blasting to commerce!* Here, then, in the very next chapter, the plainest farmer or planter, however unaccustomed to questions of political economy, can easily understand, *for himself*, how protection *does* "affect commerce," and so afterwards and in due time will he be taught how it affects the *cotton*, the *tobacco*, and the *rice* and the *sugar* planter—the landholder and the manufacturer.

Is it not, we repeat, of practical concern to the followers of all these pursuits—nay, does it not highly interest every intelligent reader—to have clearly explained, in all these lights, questions hitherto deemed too intricate and obscure to fall within the comprehension of any but *professed* political economists, and trading politicians? We feel that the very proposal of the question may almost be considered an insult to the understanding, of patrons such as ours.—*Ed. P. L. & A.*

CHAPTER SIXTH.

HOW PROTECTION AFFECTS COMMERCE.

COMMERCE is an exchange of equivalents. The greater the number of commodities produced, the greater, other things being equal, will be the number of exchanges. Commerce tends, therefore, to grow with the increase of production.

The machine of production is the earth. The instrument by aid of which it is made to produce is man. To induce man to labour, he must feel confident of obtaining an equivalent; and the larger that equivalent, the stronger will be the inducement to exertion. The more advantageously his powers are applied, the larger will be the production, and the larger the equivalent of a given quantity of labour.

One man raises grain and another sugar. Each desires to exchange with the other, giving labour for labour.

The quantity of grain that must be given for sugar is dependent upon the quantity of both produced. If the season be favourable for the first, the crop will be large. If unfavourable for the second, the crop will be small. Much grain will then be given for little sugar, and *vice versa*, if the season be favourable for sugar and unfavourable for grain, much sugar will be given for little grain. In either case both parties suffer, and commerce is diminished. Each is therefore directly interested in doing whatever may be in his power to increase the returns to the labour of his neighbour, and thus increase the extent of commerce.

To increase production is, then, to increase commerce. By ascertaining the circumstances which tend to limit the one, we shall ascertain those which tend to limit the other. To do so, it is needed only to call to our aid a few simple laws that may be found in any treatise of natural philosophy. They are these:—

First. The greater the power, other circumstances being equal, the greater will be the effect.

The producer of food labours every day and all day. The producer of sugar labours but three days in the week. The quantity of food produced is large and that of sugar small. The food-producer gives much food for little sugar—much labour for little labour.

What is true of individuals is equally true of communities. If the community of food-producers work every day, and that of sugar-producers but three days in the week, the whole of the first will be taxed because of the indolence of the last, and commerce will be diminished. If the whole community of food-producers work every day, and one half of that of iron-producers do not work—or if they apply their labour to other works than those of production—the quantity of iron produced will be small, and much food will be given for little iron. If the food-producing community could induce the workers in iron to labour every day and all day, there would be more iron to be given for food, commerce would be increased, and all would profit thereby. By what means could this be accomplished? To ascertain this, we must inquire the causes of their working so little. Doing so, we might find that among them there was a large proportion perfectly able to labour productively, but unwilling so to do; that some of them employed themselves in carrying muskets, casting cannon, building forts and palaces, constructing ships of war and sailing in them; and that others did nothing except so far as they were employed in devising modes of enabling them, out of the labour of others, to support themselves and those employed in the various operations to which I have referred; and that hosts of others were employed in carrying back and forth the products of the lands of others, and keeping accounts of what they did, and that thus one half of the community produced nothing, while consuming much. The other half we might find to consist of men who were sometimes willing to work but not able, having no work to do, and at others able but not willing, because of the small equivalent obtained, by reason of the necessity for contributing so large a portion of their earnings to the support of those who carried the muskets, built the ships and kept the accounts; and the result might be, that we should find that, although the food-producers gave much, the iron-producers received little, the principal part being swallowed up by the intermediate men, who consumed much while producing nothing. It is obvious that if all worked, there would be three times as much iron produced, that commerce would be increased, and that the producer of food would obtain far more iron as the equivalent of far less food. The food-producing community is therefore contributing largely towards the support of those of the iron-producing one who are able to work and not willing to do so; and their condition will be improved if they can induce those who are able

and willing to work to come forth from among those who are neither able nor willing, leaving the latter class to produce food and iron for themselves. The amount of power to be applied will be increased, and the product will be greater, while there will be fewer among whom to divide it. The return to labour will be larger, and the power of accumulation will be increased.

Second. The more directly power is applied, the greater is its effect.

The producers of food and iron are distant from each other, and the labour required for effecting their exchanges is great. The one obtains his iron by the indirect process of raising food for distant men. The other obtains his food by that of making iron for distant men, and many horses and wagons, ships and men, stand between them. The friction is great and production is small. The equivalents to be exchanged are few in number, and commerce is limited. The equivalent of a day's labour in either food or iron is small. If the producer of iron could draw near to the producer of food, the number of horses and wagons, ships and men, standing between them, would be diminished, and the number of producers would be increased. The equivalents to be exchanged would increase in number, commerce would grow, and the equivalent of a day's labour would be greater.

Third. The more steadily power is applied, the greater is its effect. At one moment the wind blows a gale, while at another there is a calm. The steam-engine works every day and all day, and although the amount of power applied is less, the voyage is made in shorter time. To secure the steady application of power, the air-chamber is provided, and the force produced by the action of the piston-rod is by its aid distributed over the whole period intervening between the strokes.

The producer of food is often idle. At other times he is moderately employed. In harvest times he is hurried, and he loses part of his crop for want of aid. If he could have an air-chamber, by aid of which his efforts could be divided over the year, the equivalent obtained for his labours would be largely increased.

The producer of iron may labour at all seasons, but a large portion of his work—the mining of coal and ore—may be done in advance, and when he has a stock on hand he can suspend his operations for a season. If the producer of food could induce him to come and labour in his vicinity, he could at one period of the year help him to mine or transport ore and fuel, and the other could, at another period, aid him in gathering his crop. The first could then cultivate more land, and the equivalent of labour, in both food and iron, would be increased, and commerce would grow in extent with the increase of equivalents to be exchanged.

Fourth. The more perfect the machinery the smaller will be the quantity required, the less will be the friction, and the greater will be the effect. The iron wheels of the engine encounter little friction in passing on the iron rail, and the force of a man's hand moves tons, where, if applied to a cart-wheel, it could not move a hundred.

The producer of food obtains from the distant iron man small supplies of iron as the equivalent of large quantities of food. He is therefore obliged to use wood where he would desire to use iron. The friction is great, and labour is unproductive. The equivalent of a day's labour is small. If he could induce the iron man to come near him, the equivalent of labour would be largely increased, and he could use iron in place of wood.

Fifth. The more enduring the machinery, the smaller will be the quantity of labour required for its reproduction, and the greater will be the quantity that may be given to the production of further machinery. The wooden post rots, and must be replaced. The iron one endures almost for ever.

The producer of food, distant from the producer of iron, builds ships, and

fences his land with wooden posts. Much of his time is occupied in repairing and renewing them. If he could induce the producer of iron to live near him, he would assist in building furnaces, and might then use iron posts; and then labour that would otherwise be employed in renewing old, might be given to creating new machinery of other kinds, to aid in the work of production, and the equivalent of a day's labour would be increased.

We see, thus, that the larger the quantity of labour, and the more directly and steadily it is applied, and the more perfect and enduring the machinery by which it is aided, the larger is the return to labour, and the greater the number of equivalents to be exchanged.

Let us now suppose, first, that one community has it in its power to monopolize the production of iron, and that of its members many spend all their time in idleness, while others are but occasionally employed—that many spend their time in carrying muskets on their shoulders, while very many are dissolute and drunken—and that the result is, that the quantity of iron produced is but one half or one-third of what it would otherwise be. Commerce is but an exchange of equivalents, and the quantity of food that must be given for a ton of iron is double what it would otherwise be. It is obvious that the food-producing community is taxed for the support of the idle and worthless members of the iron-producing community.

Second. That, in addition to all this, the iron-producing community is thus enabled to compel the food-producing community to be idle, when their labours are not needed on the farm, and to lose their crops for want of aid in harvest. It is obvious that here is a second tax imposed for the support of the non-workers among the producers of iron.

Third. That the scarcity of iron compels the food-producing community to use wagons and common roads when they might have railroads, and to give to the work of transportation ten days' labour instead of one. Here, again, we have a tax imposed for the support of the non-workers among the producers of iron. The food-producers are compelled to transport their products to a distance, and deprived of the power to make roads by which to do it.

Fourth. That the producers of food are compelled to employ more labour in building ships and wagons, and other perishable machinery, than would have been sufficient to build the furnaces and rolling mills, enduring machinery, required to give them all the iron they consumed. Here we have a fourth tax imposed for the support of the non-workers among the producers of iron.

Each one of these operations tends to diminish the number of equivalents that may be exchanged, the number of exchanges made, and the equivalent of a day's labour, in food, iron, or other of the comforts or conveniences of life, and the result is, that the product of labour is scarcely one-fifth of what it would be, were all productively employed.

These things premised, we may now examine the working of the colonial system.

Colonists are men who work. Of those who remain behind, a large portion do not work. Some live in poor-houses, and others in palaces. Some dance and sing, and others carry muskets. Some build ships of war, and others sail in them. The producers are few. The non-producers are many; yet they must eat, drink, wear clothing, and have houses, and these things must be provided for them by those who work. If all worked, the quantity of iron produced would be large, and those who produced food would get much iron in exchange. As few desire to work, and all must eat, the colonial system was invented for the purpose of compelling colonists to give much food and wool for little iron. The consequence has been everywhere the same.

While thus taxed for the maintenance of the money-spending classes, the colonists everywhere have been compelled to waste much labour, to work with poor machinery, and to give more of the products of labour for the use of that which is perishable than would have produced that which would endure almost for ever. Production is small. The equivalents to be exchanged are diminishing in number. Commerce is perishing.

The Irishman is compelled to waste much labour.* He works with poor machinery. He gives half the product of his labour for the use of wagons and ships. He eats his crop of potatoes, and goes in rags. He has nothing to exchange.† He flies to America, and the number of exchanges to be made in Ireland, and from Ireland, is thus diminished.

The Hindoo flies from the valleys and plains to the hills, that he may escape from the system. Arrived at the hills, he finds no demand for his labour but in the cultivation of his little piece of land. He works with poor machinery, and his miserable product of fifty pounds of cotton to the acre is transported to Manchester, thence to be returned to him in the form of cloth, getting one pound for ten; and thus giving nine-tenths of his labour for the use of ships and wagons, perishable machinery, when one-fifth would have done the work at home, could he have had permanent machinery. He flies again, or he dies of famine and pestilence, or he sells himself as a slave, to go to Demerara; and thus is the number of the exchanges of India, and from India, diminished.

Men are everywhere flying from British commerce, which everywhere pursues them. Having exhausted the people of the lower lands of India, it follows them as they retreat towards the fastnesses of the Himalaya. Affghanistan is attempted, while Scinde and the Punjaub are subjugated. Siamese provinces are added to the empire of free trade, and war and desolation are carried into China, in order that the Chinese may be compelled to pay for the use of ships, instead of making looms. The Irishman flies to Canada; but there the system follows him, and he feels himself insecure until within this Union. The Englishman and the Scotchman try Southern Africa, and thence they fly to the more distant New Holland, Van Diemen's Land, or New Zealand. The farther they fly, the more they must use ships and other perishable machinery, the less steadily can their efforts be applied, the less must be the power of production, and the fewer must be the equivalents to be exchanged, and yet in the growth of ships, caused by such circumstances, we are told to look for evidence of prosperous commerce!

The British system is built upon cheap labour, by which is meant low

* In 1842, three years before the potato rot, Ireland was thus described by an English traveller: "Throughout the south and west of Ireland, the traveller is haunted by the face of the *popular starvation*. It is not the exception—it is the *condition* of the people. In this fairest and richest of countries, men are suffering and *starving by millions*. There are thousands of them, at this minute, stretched in the sunshine at their cabin doors with *no work*, scarcely any food, no hope seemingly. Strong countrymen are lying in bed, *for the hunger*—because a man lying on his back does not need so much food as a person a-foot. Many of them have torn up the unripe potatoes from their little gardens, and to exist now must look to winter, when they shall have to suffer starvation and cold too."—*Thackeray. Irish Sketch Book*.

† People with whom starvation is "the condition" of life, consume little of that clothing which England furnishes in exchange for so much labour.

"Everywhere, throughout all parts, even in the best towns, and in Dublin itself, you will meet men and boys—not dressed, not covered—but hung round with a collection of rags of unrivalled variety, squalidity, and filth—walking dunghills. * * * No one ever saw an English scarecrow with such rags."—*Quarterly Review*.

Transferred to this country, every one of these men would become a large consumer of food and cotton, and thus commerce would be increased.

priced and worthless labour.* Its effect is to cause it to become from day to day more low priced and worthless, and thus to destroy production upon which commerce must be based. The object of protection is to produce dear labour, that is, high-priced and valuable labour, and its effect is to cause it to increase in value from day to day, and to increase the equivalents to be exchanged, to the great increase of commerce.

The object of what is now called free-trade is that of securing to the people of England the further existence of *the monopoly* of machinery, by aid of which Ireland and India have been ruined, and commerce prostrated. Protection seeks to *break down this monopoly*, and to cause the loom and the anvil to take their natural places by the side of the food and the cotton, that production may be increased, and that commerce may revive. How far it has tended here to produce that effect we may now examine.

Prior to the passage of the tariff of 1828, our exchanges of iron amounted to only 25 pounds per head. By 1832 they had increased to 46 pounds per head. Commerce thus had grown. From 1834 to 1841, they averaged 45 pounds per head. Commerce was stationary. In 1841 and '42, it fell to 38 pounds. Commerce had fallen with what was called free-trade. From 1844 to 1847, the equivalents of iron to be exchanged had increased to 97 pounds per head. Commerce had grown with protection. They are now 73 pounds per head. Commerce has fallen with the diminution of protection. If we turn now to coal, cotton, woollens, ships, or railroads, similar facts meet us everywhere. The number of exchanges grows with the system that looks to the elevation of the labourer. It diminishes with that which looks for its growth to the depression of the labourer. The interests of commerce are therefore in perfect harmony with those of manufactures and agriculture.

The one system repels population. The other attracts it, and hence it

* The poor silk weaver described in the following paragraph, which I take from the *London Spectator*, is the type of the system. He works so 'cheap' that he starves the poor Hindoo, and then starves himself. "His case *would not* be cured by protection." What he needs is the transfer of his labour from what is here called "production," but what is really only the conversion of the products of others, to that only thing which can be called production, and which consists in an increase of the *quantity* of commodities to be consumed. He merely changes their form from silk to silken cloth. Were his labours employed on any of the many millions of rich yet waste land within the kingdom, he would obtain more and better food, at less cost of labour. He could then feed better, and have more to offer in exchange. Commerce would then grow.

"Nearer to us, in the outlying parts of the metropolis, the traveller of 'The Morning Chronicle' describes regions where the people are hopelessly contending with a system of industry that is fostered by commerce, because it yields 'profit,' and is peopled, because it sometimes yields subsistence—the means of keeping body and soul together, though not always that. We know that the describer does not exaggerate. Many and many a man toils, with others of his family, from dark before the dawn until far into the next night, as long as human endurance will last, and *then* the produce of their industry falls short of subsistence. You say, 'it is a decaying trade.' It is not a decaying trade: read 'The Morning Chronicle,' and see how the workman makes silk which, in spite of free trade, not only beats the Frenchman out of the market, it is so good and so 'cheap,' but is further cheapened to bribe customers with reductions of prices filched from the wages of the miserable workman. Protection would not cure that man's case. Go round the district, stranger to you than Brussels, Lyons, or Genoa, and survey the dull, level aspect of poverty over all—poor workpeople, poor small tradesmen—a town of back streets. See the number of shops dealing in articles at second hand—not merely pawn-shops, but small clothes-dealers, traders in shop-marked stationery, dealers in apples that have seen better years in happier regions; the very grocery looks window-stained. Production, production, in a ceaseless round, but not enough subsistence for that sad nation; many things made and sold, and resold, but too few of them things to eat."

is that we see the whole people of Europe anxious to reach our shores. Abolish protection and immigration will cease, and commerce will diminish, for there will be less cloth and iron to be exchanged against labour. Make protection perfect and permanent, and immigration will increase rapidly, for there will be more cloth and iron to be exchanged against labour.

Were Ireland this day free, she would establish protection and thus arrest emigration. Food, and cloth, and iron, would become more abundant, and commerce would grow. Were Canada independent, she would establish protection, and then she would retain the immigrant coming from Ireland or England. Were India independent, she too would establish protection, and then the culture of cotton would be resumed on the rich lands of Bengal. In all these cases production would be increased, and the power to maintain commerce would grow. The people of the United States are the best customers to the people of England, because they are in some degree protected against the exhaustion consequent upon the existence of their system. Ireland cannot buy, and she is reduced to beg. Were she independent she would make iron, and then she could buy fine cloths, silks, books and pictures. The well-understood interests of all nations are in perfect harmony with each other.

The object of free trade is proclaimed to be the increase of commerce, but commerce withers under it. Ireland now consumes a pound of cotton per head. Transfer an Irishman here, and he will consume a dozen pounds, and 700,000 of her people would make more trade between the producers and consumers of cotton than is now maintained with the whole eight millions of Ireland. Were she free, she would adopt protection, and trade would grow, for she would then need six pounds per head. The commerce of the *Zollverein* has grown with protection. The people of Germany now consume two pounds of cotton where before they consumed but one. The commerce of India diminishes with every approach to what is called free trade. The producers of cotton on the lower lands of Bengal could have, as the equivalent of a day's labour, quadruple the iron that can be obtained now that the cultivator of that commodity has been driven to seek the high and poor lands.

The free trader, so called, says to the farmer, "You can have English iron in New York for thirty bushels of wheat, but you must hand over to the Treasury ten bushels for permission to make the exchange. If you take a ton of American iron, you must give to the producer of it forty bushels, and thus are you taxed ten bushels for the support of the iron man." Abolish protection and we shall have more food to sell abroad and more iron to buy abroad, and will need more wagons and ships, and it will then take sixty bushels of wheat—perhaps even one hundred—to pay for a ton of iron. The quantity to be exchanged will then fall to 20 pounds per head, and commerce will be diminished.

The farmer has his choice between giving *thirty* bushels for the support of the people who dance and sing and live in palaces, and that of those who carry muskets, or *ten* for the maintenance of the government under which he lives. The more he gives to the first, the more and the longer he must continue to give, the poorer he must grow, and the less will be the power to maintain commerce. That such is the case will be obvious from an examination of facts given in the last chapter. In the years from 1827 to 1834, 275,000,000 pounds of cotton would have purchased 1,250,000 tons of iron. In 1845–6, 600,000,000 were required to pay for 1,200,000 tons. What became of the difference? Were the English miners better clothed? On the contrary, it was but little before that time that it

was made known to the world that males and females worked together in the mines, absolutely naked. Was the condition of the people better? On the contrary, Ireland was fast becoming a great poor-house, and the poor-rates of England were fast advancing to the point they have now attained, that of £8,000,000 per annum. What then went with the difference? The question may be answered by pointing to the vast increase of public expenditure in the last fifteen years, during which the number of men who carry muskets and build ships of war has been so largely increased; to the innumerable and expensive commissions for ascertaining the causes of distress and pauperism; to the great fortunes of bankers and successful speculators; to men like Hudson, the rail-road king; to the large number who have in the late railroad speculation realized immense fortunes, as engineers, solicitors, counsellors and parliamentary agents, and to the host of others who fatten on the people. The productive power is diminishing, and the few become greater as the many become less. With every step in the progress of the latter, the power to maintain commerce diminishes, for the people become poorer, and the power to produce commodities to be given in exchange becomes more and more limited.

Whatever the occurrence that tends to diminish production, whether wars or revolutions, the increase of armies and fleets without the actual occurrence of war, or the increase of inequality, the few becoming richer and the many poorer, the effect is to impose a tax upon the consumers of the commodity the production of which is thus restrained. Under a system of real freedom of trade the chief portion of this tax would be paid by the actors themselves, for the immediate effect of such occurrences would be that of stimulating other nations to increased exertions to fill the vacuum that had been created. Under the system which gives to one nation a monopoly of the machinery for converting the products of other nations, a large portion of the tax may be, and is thrown upon them, and thus are they made to contribute largely towards the maintenance of all that class, poor and rich, who prefer to live by the labour of others.

We have seen that the quantity of cotton consumed in 1845 and '46 averaged 596,000,000 pounds, that the price of gray cloth was 6s. 7d., and that 34,700,000 pieces delivered in Liverpool would have been required to pay for the cotton also delivered in Liverpool—all freights, charges, &c., being thus left for the planter to pay.

The average work of operatives in this country would be the conversion of 4000 pounds of cotton into cloth of this description. In England, we may set it down at 3000, and this would require 200,000 to convert the whole quantity. Allowing them to average even £30 each,* the wages would amount to £6,000,000, and the product would be 92,000,000 of pieces, 35,000,000 of which would pay for the cotton, leaving 57,000,000

Worth	£19,000,000
From which deduct the labour performed, say,	6,000,000†

And there remain for interest, profits, &c., . . . £13,000,000

In order that large profits be realized, it is necessary that the price of the raw material be kept low; a state of things which results necessarily from the quantity requiring to be converted bearing a large proportion to the machinery prepared for its conversion. The mode of accomplishing this is simple. The first indication of a tendency to rise in the price is met by

* The result of careful inquiry, in 1833, gave 10s. 5d. as the average of operatives, male and female, mechanics, engineers, &c. This would be £27, 1s. 8d. for the year.

† This is 2½d. per pound, which is much more than the truth.

working short hours, the effect of which is to diminish the wages of labour to a point so near the cost of food and rent, and taxes on both, that the power of purchasing clothing is almost destroyed; and therefore it is that we see such prodigious changes in home consumption whenever a small rise of prices takes place. The stock begins to accumulate, and with its accumulation the price falls. Mills again run full time, and so they continue until another rise takes place, when the same operation is performed, as is at this moment being the case.

The exchanger, owner of machinery, thus stands between the labourer who produces, and the labourer who consumes the cotton, fixing the price for both, and taking for himself the largest share; and thus it is that men accumulate colossal fortunes, while surrounded by men, women, and children living in poverty and clothed in rags.* Of the burden thus thrown upon

* Rothschild may be taken as the type of the whole system, and the following notice of him and of his modes of taxing those by whom he was surrounded, furnishes a picture of the speculators of every kind, in England, who live at the cost of the labourers of the world :—

“The name of Nathan Meyer Rothschild was in the mouths of all city men as a prodigy of success. Cautiously, however, did the capitalist proceed, until he had made a fortune as great as his future reputation. *He revived all the arts of an older period.* He employed brokers to depress or raise the market for his benefit, and is said in one day to have purchased to the extent of four millions. The name of Rothschild as contractor for an English loan made its first public appearance in 1819. But the twelve millions for which he then became responsible went to a discount. It was said, however, that Mr. Rothschild had relieved himself from all liability before the calamity could reach him. From this year his transactions pervaded the entire globe. The Old and the New World alike bore witness to his skill; and with the profits of a single loan he purchased an estate which cost £150,000. Minor capitalists, like parasitical plants, clung to him, and were always ready to advance their money in speculations at his bidding. Nothing seemed too gigantic for his grasp; nothing too minute for his notice. His mind was as capable of calculating a loan for millions as of *calculating the lowest possible amount on which a clerk could exist.* Like too many great merchants, whose profits were counted by thousands, *he paid his assistants the smallest amount for which he could procure them.* He became the high-priest of the temple of Janus, and the coupons raised by the capitalist for a despotic state were more than a match for the cannon of the revolutionist.

“From most of the speculations of 1824 and 1825, Mr. Rothschild kept wisely aloof. The Alliance Life and Fire Assurance Company, which owes its origin to this period, was, however, produced under his auspices, and its great success is a proof of his forethought. None of the loans with which he was connected were ever repudiated; and when the crash of that sad period came, the great Hebrew looked coldly and calmly on, and congratulated himself on his caution. At his counting-house, a fair price might be procured for any amount of stock, which, at a critical time, would have depressed the public market; and it was no uncommon circumstance for brokers to apply at the office of Mr. Rothschild, instead of going in the Stock Exchange. He has, however, been occasionally surpassed in cunning; and on one occasion a great banker lent Rothschild a million and a half on the security of consols, the price of which was then 84. The terms on which the money was lent were simple. If the price reached 74, the banker might claim the stock at 70; but Rothschild felt satisfied that, with so large a sum out of the market, the bargain was tolerably safe. The banker, however, as much a Jew as Rothschild, had a plan of his own. He immediately began selling the consols received from the latter, together with a similar amount in his own possession. The funds dropped; the Stock Exchange grew alarmed; other circumstances tended to depress it; the fatal price of 74 was reached; and the Christian banker had the satisfaction of outwitting the Hebrew loanmonger. But, if sometimes outwitted himself, there is little doubt he made others pay for it; and, on one occasion, it is reported that his finesse proved too great for the authorities of the Bank of England. Mr. Rothschild was in want of bullion, and went to the governor to procure on loan a portion of the superfluous store. His wishes were met; the terms were agreed on; the period was named for its return; and the affair finished for the time. The gold was used by the financier; his end was answered, and the day arrived on which he was to return the borrowed metal. Punctual to the time appointed, Mr. Rothschild entered; and those who remember his personal appearance may imagine the

the planter much goes to the payment of taxes for the maintenance of those who are reduced by the system to a state of pauperism—much to the government, which taxes every note, bill or bond—servants, horses, carriages, &c. &c. Vast sums go to the maintenance of lawyers and conveyancers, to that of stock-gamblers and speculators, and much is lost by failures of every kind, the natural results of a gambling trade. The result is, that the cotton which yields the planter, on his plantation, but five cents per pound, and is sold in Liverpool at four-pence halfpenny per pound, is sold by the mill owner at a shilling,* and yet the reward of the labour employed in converting it into cloth is not two-pence, and probably little more than a penny per pound. It is so obviously the interest of mill owners to obtain large allowances for the use of machinery, that it cannot be doubted they will continue to pursue this course, and to make every effort that may be necessary to continue to themselves the control of the cotton market. That control depends upon continuing the monopoly of machinery; and the moment that monopoly shall be broken up, and machinery shall become so abundant elsewhere as to relieve the planter from the necessity for *seeking* a market, the power of taxation will pass away, cloth will be cheap, consumption will be trebled, and the producer will grow rich.

We may now, for a moment, look to the manner in which the sugar-planter is taxed. The quantity of sugar entered for home consumption in 1847 was 5,800,000 cwt., and the average price was about 25s. per cwt., of which at least one-fourth, and very probably one-third, went to pay the cost of transportation in and from India, the Isle of France, Brazil, Cuba, Jamaica, &c., storage, commission, &c.

Allowing it to have been three-tenths, the planter had at his command about £5,000,000

The price of iron was £9, 12s. and if we now add to this for the transportation to Cuba, Brazil, India, &c., and from the port to the plantation, only £1, 8s. we have £11 as the cost of a ton, at which rate 450,000 tons would amount to £4,950,000 and if the account were more accurately made up, it would not probably amount to 400,000 tons.

To add that quantity in a single year to the product of iron in this country, would not require the slightest exertion, and yet we see here that in return for it, small as it was, England obtained, in 1847, more than one-fourth of the products of the labour of all the sugar-producing countries of the globe! A very slight examination of this statement will show in what manner the people of the world are taxed for the maintenance of iron-manufacturers, railroad speculators, and the host of middle-men, with whom England so much abounds. Her producers are few, and her consumers are many, and the materials for their consumption are obtained by means of a system of taxation the most extraordinary that the world has yet seen.

The object of protection is not only to rescue ourselves from the necessity of contributing to the maintenance of such a system, but also to facilitate the process of emigration from lands so taxed, adding to the value of the people who remain, by diminishing the supply of men in market, and com-

cunning twinkle of his small, quick eye, as, ushered into the presence of the governor, he handed the borrowed amount in bank notes. He was reminded of his agreement, and the necessity of bullion was urged. His reply was worthy of a commercial Talleyrand. 'Very well, gentlemen. Give me the notes. I dare say your cashier will honour them with gold from your vaults, and then I can return you bullion.' To such a speech, the only worthy reply was a scornful silence."

* The piece which sold at 6s. 7d. required to produce it about 6½ pounds of cotton. The price was thus almost exactly a shilling per pound.

selling those who desire to purchase labour to give for it the proper equivalent in food and raiment, which now they do not. With every step in that direction, their power to produce iron and to consume food and clothing must grow, and the power to maintain commerce must increase.

We have seen that iron was much more costly in 1845-6 than from 1827 to '34. In opposition to this unquestionable fact, the late Secretary of the Treasury asserted that, "experience proves that from improved machinery, new inventions and reduced cost of production, the foreign articles are constantly diminishing in price."* In opposition to this we have the fact that not only was iron higher but cotton was lower. The man who gave two pounds of cotton in 1845-6 for less iron than he could have had in 1833-4 for one, found that the price of iron was increasing and not diminishing, and that it was far more difficult than in the former period to obtain what he needed for the construction of machinery. His wages in iron were thus reduced, and his power to accumulate capital was reduced; whereas, if he had made his exchanges on the spot with the producer of iron, both would have grown. Nevertheless we are told by the same authority that the necessary consequence of the protective system is, that "wages throughout the country became lower than before, because the aggregate profits of the capital of the nation engaged in all its industry is diminished."† It is deemed most profitable to trade with those nations whose labour is low, and the lower it is "the greater is our gain in the exchange." The labour of Great Britain is lower than it was fifteen years since, because it is less productive, and the less her people produce, the less they have to give us in exchange for our products; the consequence of which is, that we give more cotton for less iron. If all the people of England were to work, they would produce far more cloth and iron; wages would then rise, and the equivalent of a bale of cotton in iron would be doubled. The more productively the people of the world are employed, the greater will be the value of their labour, and the larger will be the quantity of good things that we shall obtain in exchange for our labour. The larger their armies, the more destructive their wars, the more numerous their revolutions, the more their money-spending classes, paupers and noblemen, abound, the smaller will be the value of labour abroad, the smaller will be their power to maintain commerce, and the smaller will be the advantage to those who trade with them; for the less silk or iron they produce, the more food or cotton must be given them as the equivalent of similar quantities.

The document to which I have above referred belongs to the school of discords; that which teaches to buy in the cheapest and sell in the dearest market, and sees great advantage to be gained by reducing the cotton of the poor Hindoo to a penny a pound, careless of the fact that famine and pestilence follow in the train of such a system. The policy that produces a *necessity* for depending on trade with people who are poorer than ourselves tends to reduce the wages of our labour to a level with theirs, and to diminish commerce. That which should give us *power* to trade with nations who might be richer than ourselves would tend to raise our wages to a level with theirs. By bringing the Irishman here, and enabling him to make his exchanges with us, we raise him to our level as a producer. By exporting our people to Ireland, and compelling them to make their exchanges there, we should sink their wages to a level with those of that country. The policy that brings people here and raises them in the scale of civilization, is that which promotes commerce. That which causes them to return home, and thus arrests the tide of immigration, preventing advance in civilization, is the one which diminishes commerce.

* Report, December, 1848.

† Ibid.

CHAPTER SEVENTH.

HOW PROTECTION AFFECTS THE QUANTITY AND QUALITY OF THE MACHINERY OF PRODUCTION.

THE object sought to be accomplished is the improvement of the condition of man. The mode by which it is to be accomplished is that of increasing his productive power. The more food a man can raise, the more and better food may he consume, and the larger will be the surplus that can be appropriated to the purchase of clothing, to the education of his family, to the enlargement of his house, or to the improvement of his machinery, and the greater will be the amount of leisure that can be appropriated to the improvement of his modes of thought.

The better his machinery, and the more readily it can be obtained, the larger will be his production. Machinery consists chiefly of iron, and the more readily that can be obtained, the more rapid will be the increase of production and the improvement of the physical, moral, intellectual and political capacities of man. It is the great instrument of civilization.

The more durable his work, the more rapidly will his capital increase. Where iron is abundant it is substituted for wood in the building of houses, which are thus secured from fire, and in the construction of ships and roads, by which transportation is improved—and with each such step his powers of production are increased.

That he may obtain iron readily, he must have the command of fuel, obtainable at moderate cost of labour—in other words, cheaply—for things are cheap or dear not in proportion to their money-price, but to the quantity of labour required for obtaining them. The money-price of grain, in Ireland, is less than in England, yet the cost in labour is so great that the poor cultivator eats still poorer potatoes. The money-price of coal is less than it was two years since, yet the consumption has diminished, because the labour-price has risen. The money-price of cotton in those parts of India in which it is raised, is about two cents per pound, yet the man who raises it covers his loins with a rag, dispensing with clothing for the rest of his body, because the labour-price of cloth is great. Where production is small, the labour-price of commodities is high, and consumption is very small; and *vice versa*, where production is large, the labour-price of commodities is low, and consumption is great.

Large production requires good and cheap machinery, and that we may obtain such machinery, we must have good and cheap fuel. Abundance of fuel and iron are the foundation upon which civilization must rest, and whatever the course of policy that tends most to facilitate their acquisition, that is the one which must tend most rapidly to augment the productive power of man, and to increase his power and his capacity for improvement.

Iron ore and fuel exist throughout this country in such profusion as is elsewhere unknown. Nowhere in the world can they be so readily obtained—nowhere so easily brought into combination with each other. The anthracite of Pennsylvania is the best fuel in the world, and it can be mined as cheaply as any other. It is interstratified with iron ore in great abundance. Limestone underlies the whole of the great Schuylkill region, and it may be obtained with as little labour as anywhere in the world. The ores and fuel of Ohio and the West are thus described:—

The beds of ore are easy of access, being and associated with materials necessary for its reduction, cannot fail to be of immense sources of wealth. Most of the working-beds of ore are above the first workable bed of coal. The amount of workable ore in Muskingum county is estimated at 153,600,000 cubic yards, which, when melted, will yield about

half that number of tons, in pigs. We need not now speak of localities. Mr. Briggs closes his report on iron ore as follows:—"A very low calculation of the amount of good iron ore in the region which has this season been explored, is equal to a solid, unbroken stratum, sixty miles in length, sixty miles in width, and three feet in thickness. A square mile of this layer, being equivalent in round numbers to three millions cubic yards, when melted, will yield as many tons of pig iron. This number, multiplied by the number of square miles in the stratum, will give 1,080,000,000 tons; which, from three counties alone, will yield annually, for 2700 years, 400,000 tons of iron—more than equal to the greatest amount made in England previous to the year 1829."—*Ohio Paper*.

The country bordering on Carp River (Lake Superior) is, perhaps, the richest on the globe for its iron ore. The "Jackson Iron Company," whose location we had the pleasure of visiting, is situated some twelve miles from the Lake Shore, and about three miles from the iron mountains. One of these mountains belongs to the above-named company, and the other to the "Cleveland Iron Company." These two mountains, as we were informed, are by far the richest and most valuable of any iron deposit that have been discovered—though it is said that more or less iron ore is found spread over some seventeen or eighteen townships between Lake Superior and Green Bay. This ore contains from 75 to 90 per cent. of pure iron, and metal made from it by the Jackson Company has been submitted to the severest tests, and proves to be of the very best quality of iron that is made in any part of the world, having been drawn down to the size of No. 36 wire. The Jackson Iron Company (under the superintendence of P. M. Everett, Esq., who we now understand leaves, and is succeeded by Czar Jones, Esq., of Jackson) has been making iron for some twelve or eighteen months.—*Lake Superior News*.

Such being the case, we might suppose that the consumption of fuel and iron would be great, but such has not been the case.

In 1810, the domestic manufacture amounted to only 50,000 tons. In 1828, it had reached 100,000. In 1818, '19, '20, it may perhaps have reached 70,000, but even that is very doubtful. The total importation of bar and pig iron in those years was 40,000 tons, or 13,333 per annum. The import of manufactured articles of iron may have been half as much, and this would give a consumption of 90,000 tons, or 200,000,000 of pounds for a population of 9,400,000 persons, being a little over 20 pounds per head. The average consumption of the Union for all purposes, for house-building and ship-building, for agricultural implements, and for machinery of every description, was equal, therefore, to little more than twice the weight of an axe per head per annum, and yet there existed, as there now exists, a capacity to produce iron at less cost of labour than anywhere in the world. If we desire now to understand the cause of this, it may be found in the fact that up to the Revolution, the manufacture of iron, even that of horse-shoe nails, was prohibited, and there existed no inducement to erect works for the smelting of the ore, when the pig could not be used. The consequence was, that it did not grow with its natural growth, while that of England was forced forward, and when the day of nominal independence arrived, that of real independence was still far distant. Under the various tariffs from 1789 to 1812, the duties were ad-valorem, commencing with $7\frac{1}{2}$ per cent. and gradually rising until they had attained, before the war of 1812, $17\frac{1}{2}$ per cent. The production of iron had made no progress, and the whole supply had to be sought abroad, the consequence of which was that it was scarce and dear. Embargo, non-intercourse, and war raised the price so high that furnaces were built in considerable numbers; but with the peace, the duties on manufactured iron were reduced to 20 per cent. The demand for pig iron was thus diminished, and the price in Pittsburgh, which had been \$60, fell in 1820 and 1821 to \$20, the consequence of which was the ruin of nearly all engaged in its production. This, however, was not a consequence of reduction of duty. At that very time the duty on pigs was \$10, and on bars \$30 per ton, and thus the selling price at that place was *far less than the freight and duty on imported iron*. Iron was nominally cheap, but

really dear: so dear that consumption was destroyed. Labour was at \$6 per month, and wheat sold for 25 cents a bushel, and thus was produced so total an inability to consume this most necessary of all commodities, that although the furnaces were closed, the whole import of pig and rolled iron in 1821, was but 4000 tons, or one ton to every 2,500 persons. It may be doubted if the consumption of that year exceeded six pounds per head. We see thus that the power to import disappeared with the power to produce, as has already been shown to have been the case on other occasions.

Who, now, were the losers by the greatly increased difficulty of obtaining this great instrument of civilization? To answer this question, we must first inquire who are the great consumers of iron? The farmers and planters constitute three-fourths of the population of the nation, and if the loss were equally distributed, that portion of the loss would fall upon them; but we shall find upon inquiry that it is upon them, the producers of all we consume, that the whole of it must fall.

The farmer needs iron for his spades and ploughs, his shovels and his dung-forks, his trace-chains and horse-shoes, and his wagon-wheels; for his house, his barn, and his stable. He needs them, too, for his timber. If iron be abundant, saws are readily obtained, and the saw-miller takes his place by his side, and he has his timber converted into plank at the cost of less labour than was before required to haul the logs to the distant saw-mill. He obtains the use of mill-saws cheap. If iron be abundant, the grist-mill comes to his neighbourhood, and now he has his grain converted into flour, giving for the work less grain than was before consumed by the horses and men employed in carrying it to the distant mill. If iron be abundant, spades and picks are readily obtained, and the roads are mended, and he passes more readily to the distant market. If iron increase in abundance, the railroad enables him to pass with increased facility, himself, his turnips and potatoes, to markets from which before he was entirely shut out by cost of transportation, except as regarded articles of small bulk and much value—wheat and cotton. If iron be abundant, the woollen-mill comes, and his wool is converted on the spot by men who eat on the ground his cabbages and his veal, and drink his milk, and perform the work of conversion in return for services and things that would have been lost had they not been thus consumed. At each step he gets the use of iron cheaper—that is, at less cost of labour. If iron be abundant, the cotton-mill now comes, and the iron road now brings the cotton, and his sons and his daughters obtain the use of iron spindles and iron looms by which they are enabled to clothe themselves at one-twentieth of the cost of labour that had been necessary but twenty years before. Instead of a yard of cotton received in return for two bushels of corn, one bushel of corn pays for six yards of cloth—and now it is that the farmer grows rich.

A careful examination of society will satisfy the inquirer that all the people engaged in the work of transportation, conversion, and exchange, are but the agents of the producers, and live out of the commodities they produce, and that the producers grow rich or remain poor precisely as they are required to employ less or more persons in the making of their exchanges. The farmer who is compelled to resort to the distant mill employs many persons, horses and wagons, in the work of converting his grain into flour, and his land is of small value. Bring the mill close to him, and a single horse and cart, occasionally employed, will do the work. The farmer who employs the people of England to produce his iron, is obliged to have the services of numerous persons, of ships and wagons, and horses, to aid in the work. Bring the furnace to his side, and let his neighbour get out his iron, and he and his sons do much of the work themselves, furnishing

timber, ore, and the use of horses, wagons, &c., when not needed on the farm.

The man of Tennessee sends to market 300 bushels of corn, for which he receives in return one ton of iron, the money-cost of which is \$60, but the labour-cost of which is the cultivation of ten acres of land. If he could follow his corn, he would find that the men who get out his iron receive but 30 or 40 bushels, and that the remaining 260 or 270 are swallowed up by the numerous transporters and exchangers that stand between himself and the men whom he thus employs. If, now, he could bring those men to his side, giving them double wages, say sixty bushels of corn, he would be a gainer to the extent of 240 bushels. While he has to give 300 bushels, his iron is dear, and he can use little. When he obtains it for 60 bushels it is cheap, and he uses much. His production increases, and his ability to use iron increases with it, and the demand for workers in iron increases, and all obtain food more readily, the consequence of which is that they have more to spare for clothing, and for other of the comforts or the luxuries of life.

Whenever there is in market a surplus of any commodity, the whole quantity tends to fall to the level of the lowest price required to enable the holders to find purchasers, and so long as we shall continue to have a surplus of food for export, the price of the whole must continue to be regulated by that which can be obtained for the trivial quantity sent to Liverpool.

Whenever it is necessary to resort to distant places to procure a part of the supply of any commodity, the price of the whole is regulated by the cost of obtaining this last small portion. In 1847, we produced 800,000 tons of iron, yet the demand was so much in advance of the supply that we were obliged to import a small quantity, and the price at which that was obtained fixed the price of the whole. The farmer is thus always selling in the cheapest and buying in the dearest market. The labour and capital required to produce a ton of iron, are not as great as are needed for the production of forty bushels of corn, and yet he gives for it three hundred, because of the quantity of labour wasted in transporting the one to the man who produces the other.

The prices of labour and iron are both higher than in Europe, and therefore we import both. The price of food is lower than in Europe, and therefore we export it. Whenever the import of labour shall be such as to do away with the *necessity* for exporting food, as food, its price will be high, and we shall cease to export it. Whenever the import of men shall be such as to do away with the *necessity* for importing iron, the price will be low, and we shall export food in the form of iron. By the same operation the farmer will thus be enabled to obtain high prices for his grain, and to buy his iron cheap. He will then buy in the cheapest and sell in the dearest market, and the value of his labour will be increased.

We have seen that in the period that elapsed between 1821 and 1829, embracing the six years which followed the passage of the act of 1821, the consumption of iron rose to about 25 pounds per head. In the three following years, under the tariff of 1828, it rose to 47. By the Compromise Act, the duty on railroad iron was abolished, and the consequence was, that the power of consumption diminished, remaining at an average of but 46 pounds for the next nine years. Under the strictly revenue clauses of the tariff it fell to 38 pounds, being less than the consumption of eleven years before. By 1846, it had risen to 94, and in the following year it rose to 98. Who were the persons that benefited by this change? Let us see. The abundance of iron facilitated the opening of coal mines by means of steam-engines and other machinery, and the making of roads, by means of which coal, and food,

and timber could be taken to market, and thus greatly diminished the number of persons intermediate between the producer and consumer; and the abundance of fuel and iron facilitated the construction of steamboats, diminishing greatly the cost of transportation to and from market; and facilitated the construction of mills and furnaces, at which the farmers and planters could make their own exchanges; while the increased facility of obtaining ploughs and harrows, spades and axes, tended to increase the productiveness of labour, with large increase in the quantities to be exchanged, and in this manner the whole benefit resulting from the augmented facility of obtaining iron went to the cultivators of the land, farmers and planters.

But why should protection have been necessary to produce this result? To the general reasons already given, may now be added, those which refer particularly to iron. In a table now before me,* the English prices of merchant-bar iron are thus given:—

£	s.	£	s.	£	s.	£	s.	£	s.	£	s.
1816—11	0 @	8	15	1827—9	10 @	8	15	1837—10	5 @	6	15
1817—8	10 @	13	0	1828—9	0 @	7	15	1838—9	10 @	9	15
1818—12	0 @	10	0	1829—7	10 @	6	12	1839—10	5 @	9	10
1819—11	10 @	11	0	1830—6	15 @	6	5	1840—9	0 @	8	0
1820—10	10 @	9	10	1831—6	5 @	5	17	1841—7	15 @	0	0
1821—9	10 @	8	15	1832—6	5 @	5	10	1842—6	10 @	5	5
1822—8	10 @	8	0	1833—6	15 @	7	15	1843—5	0 @	4	10
1824—13	0 @	8	15	1834—6	10 @	7	12	1844—6	6 @	5	0
1825—15	0 @	11	10	1835—8	5 @	6	5	1845—6	10 @	9	0
1826—11	0 @	9	10	1836—11	10 @	10	5	1846—9	0		

We have here £4 10=£21 60, and £15=\$72, and every price between. Why should these enormous variations take place? It costs no more labour to make iron at one time than at another. The man who mined a ton of ore or coal in 1832, when the price was £5 10, could mine more than a ton in 1846, because machinery had been greatly improved, and yet the price was then £9.

The season may be adverse for the growth of grain or cotton, and the rot may destroy the potato crop, thus diminishing the quantity to be supplied with great increase of price, and yet neither food nor cotton is liable to the enormous and sudden changes that we see in regard to iron, which ought to be perfectly steady. These changes are due to the unsound character of the system, and the perpetual changes that result therefrom. The consequence of them is, the constant recurrence of ruin to all, in other countries engaged in the manufacture of iron. In 1816 it was high, and furnaces were built. In 1821, it was low, and iron-masters were everywhere ruined. In 1825 it was high, and furnaces were again put in blast. In 1831, furnace-masters were again ruined. In 1836 it was high, and in 1842, it was low, and on both occasions the same operations were repeated. So again in 1846, furnaces were built, and now, in 1849, they are being closed.

The consequence of this is that the iron manufacture throughout the country is in a barbarous condition. Small furnaces abound, at which much labour is given to producing little iron. At each forced intermission of the exertions of England to maintain the monopoly of the production of this important commodity, we can see it making its way gradually to the land where alone it can be produced at small cost of labour—that land where ore, coal, and limestone are interstratified with each other, and at which it would long since have arrived but for our frequent changes of policy.

* Merchants' Magazine, Vol. XX. p. 337.

Very little examination is necessary to satisfy the inquirer that it has been precisely when iron has been lowest in England, in 1822 and 1843, that our consumption was least; and it is now diminishing rapidly, as our furnaces are being closed and their owners ruined. *The power to consume declines daily.* With another year or two the price abroad will be high, but time will then be required to get the old furnaces into operation, and still longer to build new ones; for iron-making is like buying lottery tickets, and the blanks are more numerous than the prizes. That time arrived, pig iron may be again \$40 and bars \$80 per ton.

So long as a nation is dependent on England for any portion of its supply, so long must prices continue to be thus variable, and so long must the consumption of this important article, and the facilities for producing it, be small, and all the deficiency falls on the producer of food, or wool, or cotton; for it is he that pays the cost of transportation, conversion and exchange. The consumption of the present year will not, probably, exceed 700,000 tons, for the make at home is greatly diminished, and the stock on hand has increased to an extent nearly approaching that of the import from abroad. Next year, there is strong reason for believing that it will be still farther diminished, whereas, there can be no doubt that that year, had the system of 1842 remained unchanged, would have seen the domestic product attain 1,300,000 tons, or 3,000,000,000 of pounds, being 125 pounds per head; the *increase* for 1846 having been almost equal to the whole consumption, per head, in 1842-3. Thenceforth, the price would have been regulated by the cost of production here, and not by the fluctuations of policy abroad; and thenceforth the prices would have been daily diminishing, as the machinery of production improved. The object of the colonial system is that of increasing the number of transporters, converters and exchangers, who are to be supported out of the labours of the farmers and planters. The object of the protective system is to diminish the number; and the question now to be settled is, whether the labourers, the men who produce all that we consume, or the exchangers shall be masters. Were the latter to succeed, we should have perfect freedom of trade, so far as freedom consists in being compelled to forego the association of men with their fellow-men for the improvement of their condition, and the result would be the stoppage of every furnace in the Union; when all those engaged in mining coal and ore would be compelled to resort to the raising of food, which would be lower, while iron would be higher and greatly higher. Its cost in labour would be so far increased that consumption would fall to the point at which it stood in 1821. Perfect protection would soon quadruple our production, and vast numbers of persons would mine iron and coal instead of raising food, which would be higher. The labour-cost of iron would be diminished, and the consumption would be increased; and it is by aid of iron that production is to be increased, exchanges facilitated, conversion improved, land increased in value, and farmers and planters made rich.

From 1829 to 1832, the domestic production increased about fifty per cent. During the whole of that period, the Union was agitated by threats of nullification and disunion, and there existed no motive for investing in furnaces or rolling-mills the large amounts required for the cheap production of this important commodity. From 1842 to 1847, the production trebled, and perhaps quadrupled. During the intermediate period it was almost stationary.

I propose to inquire what would have been the result, had the production gone on to increase at the rate of only 15 per cent. per annum, and then to examine what would have been the effect on the working men, the planters and

farmers of the Union, with a view to ascertain from the experience of the past what is probably the true course of policy for the future.

Starting with 200,000 tons in 1832, and increasing the product 15 per cent, the succeeding years would have been as follows:—

Years.	1000 tons.	Years.	1000 tons.	Years.	1000 tons.
1833 . .	230	1839 . .	532	1845 . .	1230
1834 . .	265	1840 . .	612	1846 . .	1415
1835 . .	305	1841 . .	704	1847 . .	1630
1836 . .	350	1842 . .	810	1848 . .	1875
1837 . .	402	1843 . .	930	1849 . .	2150
1838 . .	462	1844 . .	1070	1850 . .	2472

It will be seen that the highest increase of any year is scarcely more than that which actually took place in years between 1843 and 1847, when every thing had to be recommenced, after a state of almost utter ruin. What now would have been the amount of investment required for the production of this quantity of pig-metal? A furnace capable of producing 5000 tons per week may cost \$30,000. We can now produce 800,000 tons. To have made it 2,000,000 would have required the building of 240 furnaces more than we have built, and their construction would have required \$8,000,000, being far less than the amount that has in that period been spent *in building* packet ships to run between New York, London, and Liverpool,—leaving out of view all other expenditure upon shipping, whether for building or sailing them. The ships have disappeared, or will disappear, leaving nothing behind. The furnaces would be still in existence. At one establishment in Pennsylvania there are six furnaces capable of producing 800 tons of metal per week, or 41,600 tons per annum. The cost of these may have been \$200,000. To build ships capable of transporting that quantity would require an investment of at least \$750,000. At the end of a few years, the whole of that capital would be sunk, while the furnaces might last almost for centuries. The tendency of the colonial system is thus to compel the employment of capital in temporary machinery, and the object of protection is to enable the owner of it to invest it in that which is permanent.

It will be asked, what should we have done with all this iron? In answer, I say, that every man is a consumer to the full extent of his production. The man who made the iron would have required food, fuel and clothing. The man who mined the fuel would have required iron, food and clothing. The man who raised the food would have required iron, fuel and clothing. The man who made the clothing would have required iron, food and fuel. The man who raised the wool and the cotton would have required food, fuel, iron, and clothing. Production would have largely increased, and there would have been a large increase in the power of consuming all the commodities necessary for the convenience and comfort of man. In other words, there would have been a great increase in the profits of capital and the wages of labour.

Had production gone on at the rate I have indicated, we should have in the period from 1834 to the present time 15,000,000 of tons, whereas we have had but 5,000,000. These 10,000,000 would have filled the country with machinery, enabling the farmers and planters to have the consumers by their sides, and in addition would have given them roads by which to go to market at half the present cost. Their necessity for going to distant markets would have diminished, while their power so to do would have increased, and with every step in this progress they would have become enriched.

It may, perhaps, be said that this demand for labour would have dimin-

ished the power to produce food and cotton. On the contrary, it would have increased it. Two-thirds of the labour actually employed in the making of this iron and its conversion into the various forms to fit it for use, would have been saved labour—labour that has been wasted. Further, the farmer and planter would have exchanged their food and cotton on the spot for iron, and here would have been a further and vast saving of labour. The increased facility of obtaining spades and hoes, ploughs and harrows, horse-shoes, carts and wagons, would have rendered the labour on the farm or plantation more productive. The rapid growth of railroads would have prevented the necessity for going to market with produce, and facilitated the transport of manure, and marl, and lime, and thus the power to apply labour steadily and advantageously would have largely increased. The neighbouring cotton-mill or woollens-mill would have furnished clothing for food and labour, and thus the necessity for looking to distant markets would have been diminished, while the power to resort to them would have largely increased. The increased demand for labour and its increased reward, would have tended largely to augment immigration, and each new arrival would have been a mouth to be fed and a back to be clothed, to the advantage of both farmer and planter. Farms and plantations would have been divided, and more food and cotton would have been obtained from small ones than are now obtained from large ones. The land would have increased in value, and the farmers and planters would have grown rich because of increased production and diminished cost of exchange, and a part of the surplus would have been appropriated to the purchase of books and newspapers, and musical instruments and pictures, and thus would intellectual have kept pace with moral and physical improvement. Instead of all this, the period from 1835 to 1843 was one of diminished production and increasing poverty and crime, ending with bankruptcy and repudiation.

What has been said in regard to iron is equally true in regard to coal, but it is unnecessary to go into detail. Had the tariff of 1828 been adopted as the settled policy of the nation, the consumption of anthracite would by this time have reached 10,000,000 of tons, and the vast coal fields of the West would likewise be giving forth their products by millions, and thus the food of the farm would have been condensed into fuel and iron, fitting it for transportation, and providing means of transportation. Instead of this, we have had a series of changes that have involved in ruin almost all that have been largely interested in giving to the nation the extraordinary works that connect Philadelphia and New York with the great coal region of Pennsylvania, and State bankruptcy and repudiation have been followed by that of companies which have done more for the real advantage of the Union than any others that have ever existed within its limits, and all this has been produced by a policy under which the whole consumption of iron was reduced below 40 pounds per head, when it might long since have reached 300.

Had the production of iron and coal been allowed to increase, and the manufacture of cotton to grow, we should be now consuming a million and a half of bales; and had the woollens manufacture been allowed to grow, we should now have a hundred millions of sheep, the whole of whose wool would be required for our domestic consumption, for those who produce largely consume largely.

The perfect harmony of interests is nowhere more perfectly exhibited than in a thorough examination of the course of proceeding in relation to both coal and iron. Both were heavily protected from 1816 to 1824, but neither grew, because the iron *manufacture*, the cotton and the woollen manufactures, did not grow; and so would it now be, were iron and coal protected at the cost of cotton and wool. All wax and wane together, and the

man who would protect himself at the cost of his neighbour, makes a sad mistake. It is useless to produce iron without a market, and that market is to be found in the rolling-mill, the foundery, the machine-shop, the cutler's shop and that of the axe-maker, and they in turn must find a market among the producers of food, and wool, and cotton. The shipwright uses largely of iron, and that he may do so, there must be a large market for sugar, tea, coffee, and other of the luxuries and comforts of life. The larger the market, the larger will be the consumption of iron, and the larger the latter, the more rapidly will the former grow. In a wise political economy there will be found no discords.

CHAPTER EIGHTH.

HOW PROTECTION AFFECTS POPULATION.

COMBINATION of action is indispensable to increase in the value of labour. The first cultivator can neither roll nor raise a log, with which to build himself a house. He makes himself a hole in the ground, which serves in lieu of one. He cultivates the poor soil of the hills to obtain a little corn, with which to eke out the supply of food derived from snaring the game in his neighbourhood. His winter's supply is deposited in another hole, liable to injury from the water which filters through the light soil into which alone he can penetrate. He is in hourly danger of starvation. At length, however, his sons grow up. They combine their exertions with his, and now obtain something like an axe and a spade. They can sink deeper into the soil; and can cut logs, and build something like a house. They obtain more corn and more game, and they can preserve it better. The danger of starvation is diminished. Being no longer forced to depend for fuel upon the decayed wood which alone their father could use, they are in less danger of perishing from cold in the elevated ground which, from necessity, they occupy. With the growth of the family new soils are cultivated, each in succession yielding a larger return to labour, and they obtain a constantly increasing supply of the necessities of life from a surface diminishing in its ratio to the number to be fed; and thus with every increase in the return to their labour the power of combining their exertions is increased.

If we look now to the solitary settler of the West, even where provided with both axe and spade, we shall see him obtaining, with extreme difficulty, the commonest log hut. A neighbour arrives, and their combined efforts produce a new house with less than half the labour required for the first. That neighbour brings a horse, and he makes something like a cart. The product of their labour is now ten times greater than was that of the first man working by himself. More neighbours come, and new houses are wanted. A "bee" is made, and by the combined effort of the neighbourhood the third house is completed in a day; whereas the first cost months, and the second weeks, of far more severe exertion. These new neighbours have brought ploughs and horses, and now better soils are cultivated and the product of labour is again increased, as is the power to preserve the surplus for winter's use. The path becomes a road. Exchanges begin. The store makes its appearance. Labour is rewarded by larger returns, because aided by better machinery applied to better soils. The town grows up. Each successive addition to the population brings a consumer and a producer. The shoemaker wants leather and corn in exchange for his shoes. The blacksmith requires fuel and food, and the farmer wants shoes for his horses; and with the increasing facility of exchange more labour is applied to production, and the reward of labour rises, producing new wants, and requiring more and larger exchanges. The road becomes

a turnpike, and the wagon and horses are seen upon it. The town becomes a city, and better soils are cultivated for the supply of its markets, while the railroad facilitates exchanges with towns and cities more distant. The tendency to union and to combination of exertion thus grows with the growth of wealth. In a state of extreme poverty it cannot be developed. The insignificant tribe of savages that starves on the product of the upper soil of hundreds of thousands of acres of land, looks with jealous eyes on every intruder, knowing that each new mouth requiring to be fed tends to increase the difficulty of obtaining subsistence; whereas the farmer rejoices in the arrival of the blacksmith and the shoemaker, because they come to eat on the spot the corn which heretofore he has carried ten, twenty, or thirty miles to market, to exchange for shoes for himself and his horses. With each new consumer of his products that arrives he is enabled more and more to concentrate his action and his thoughts upon his home, while each new arrival tends to increase his *power* of consuming commodities brought from a distance, because it tends to diminish his *necessity* for seeking at a distance a market for the produce of his farm. Give to the poor tribe spades, and the knowledge how to use them, and the power of association will begin. The supply of food becoming more abundant, they hail the arrival of the stranger who brings them knives and clothing to be exchanged for skins and corn; wealth grows, and the habit of association—the first step towards civilization—arises.

It is not good for man to be alone, and yet throughout this country, we find thousands and tens of thousands of men flying to the West, there to commence the work of cultivation at a distance from their fellow-men, while millions upon millions of acres of rich land in the old States remain untouched. If, now, we refer to the course of events during the last thirty years, we see that the tendency to migration increased rapidly between 1834 and 1842, when the building of mills and furnaces ceased, and that during that period we colonized Texas and Oregon. In the years which followed, the tendency to emigrate diminished, to break out afresh under the influence of the policy of 1846. The last twelve months have witnessed the departure of very many thousands to California, Santa Fe, &c., while the emigration to Iowa, Wisconsin, and other portions of the extensive West, is entirely without precedent.

“It is estimated,” says the editor of one of the Iowa papers,

“That between fourteen and fifteen hundred wagons have crossed the Mississippi at this place, within the last five weeks, bringing emigrants from Ohio, Indiana and Illinois, and all of them seeking homes in Iowa. They have,” says he, “generally gone to the new counties on and west of the Des Moines river, where, we know, they will find lands and other agricultural advantages, equal to any in the world. Allowing five persons to a wagon, there have crossed at this place alone, between 7000 and 8000 persons. We are told that the same extraordinary influx of immigrants has taken place at all the other crossings along the river Dubuque, down to Keokuk. It is, therefore, reasonable to suppose that from 30,000 to 50,000 persons have been added to our population within the last month and a half, and the tide is still pressing towards us.”*

If we desire to find the reason for the extraordinary tendency now prevailing to seek the West, it may be found in the diminishing value of labour in the older States. The production of iron, coal, cotton and woollen cloths, and of commodities generally, has diminished; and there is not only no demand for labour in the construction of new mills and furnaces, or in the opening of new coal mines, but the number of persons employed is actually diminished. The natural increase of our population is almost 600,000, and the immigration of the present year is about 300,000; and thus 900,000

* Burlington (Iowa) Gazette.

persons are added, while the number that can find employment in the old States is less than it was two years since. All these people must eat, and if they cannot obtain food in exchange for labour, employed in the mining of coal or manufacture of cloth or iron, they must raise it for themselves, and hence it is that the population of the new States grows now so rapidly.

Here is a case of apparent discord. The people of the new States need neighbours to help them to make roads and build churches and school-houses, and the state of things that injures the farmers of Pennsylvania, New York and Virginia, benefits all those who are already in Wisconsin and Iowa. They profit by free-trade and would be injured by protection. Strange as it may seem, however, directly the reverse is the case. The harmony of interests is perfect, and the discord is only apparent. The new States would grow faster under protection than they now do under free-trade. But for the abolition of protection, in 1832-3, Iowa, Wisconsin, &c., would now be populous States, as I propose now to show. From 1821 to 1825, there existed no inducement for emigration from Europe to this country. Wages here were low, and the difficulty of obtaining employment was great. The average number of immigrants was but 7138, and the last year was little more than the average. By 1829, it reached 24,000. Five years after, (1834,) it was 65,000. The average of the next nine years was but 72,000; and, in the last of those years, it was but 75,179. Like every thing else, immigration was stationary. In the four following years it was trebled. This year it may reach 200,000. It has already begun to decline.

It is obvious that the demand for labour grows with increase in the number of modes in which it can be applied; and that with every step in that direction the return to labour increases, enabling the labourer to obtain larger wages—that is to say, more food, fuel, clothing, books and newspapers, and greater facilities for the education of his children, in return to the same labour. We see that the power to obtain these good things increased rapidly from 1830 to 1834, and that the effect was to produce a vast increase of immigration. With every such increase there must, necessarily, have been increased power of combination, accompanied by increased facilities for obtaining the things for which men are willing to labour; offering new attractions for the labourer, and producing a further increased tendency in the same direction. In a former chapter, I have supposed that it might by this time have reached 1,000,000 per annum, and that it would have done had it doubled but once in four years. A duplication in three years would have brought it by this time to 2,000,000. Taking it, however, at the former quantity, we should have imported in the intermediate period nearly 6,000,000, instead of less than 2,000,000. If we now add thereto the natural increase of all these people, we would have at this moment a population exceeding by at least 5,000,000 the number we now have; and of these, while vast numbers would have been employed in giving value to the lands of the older States, by opening mines and building furnaces, millions would have sought the West, the access to which would have been rendered daily more and more easy by the increased facility of obtaining iron for the construction of steam-boats and rail-roads.

The large immigration of the last and previous years is by many ascribed to the troubles in Europe; but their effect has been small. All commodities tend to seek the best market, and to this rule labour forms no exception. The people of Europe are anxious to transfer themselves here because man is here a commodity of more value than in Europe, and can obtain more food, fuel and clothing, and better shelter, in return for the same quantity of labour, than he can at home; and the more widely extended the knowledge that such is the fact, the greater is the anxiety to reach our shores. Had

the demand for labour continued to increase as it did from 1844 to 1847, the immigration of the present year would probably far exceed even half-a-million; whereas, there is every reason to believe that there will be a great diminution.

CHAPTER NINTH.

HOW PROTECTION AFFECTS THE MEANS OF TRANSPORTATION—INTERNAL AND EXTERNAL.

THE more widely men are separated, the greater is the difficulty attendant on the making of roads, and the greater is the quantity of labour lost to the farmer in performing the work of transportation, and the poorer he remains. The more men are enabled to combine their exertions, the greater is the facility of obtaining roads; the less the labour lost in transportation, the more can be given to the work of production, and the richer will the farmer grow.

During the years from 1835 to 1840, the tendency was to separation, and there was great need of roads. The widely scattered settlers of Illinois, Indiana, Michigan and Mississippi could not make them of themselves, and none would trust them individually with the means necessary for their construction. To remove this difficulty, they united in borrowing the food and clothing and the iron required for the purpose, pledging the faith of the State for payment of the cost, and the result was universal ruin. Men were scattering themselves, and labour was becoming less productive; the consequence of which was, that immigration ceased to increase; and *it was precisely when the growth of population from that source was arrested*, that we were extending the area of settlement, and diminishing the power of combining exertion for the purpose of increasing the return to labour.

We are now doing precisely the same thing. Men are scattering themselves widely, and there is a great demand for roads. The papers from day to day inform us of the new ones that are being made in the West with iron that is obtained in exchange for certificates of debt, bearing interest, that must be paid. The men who should be making iron are seeking the West, and borrowing the iron they should be making, and, if the system be long continued, the result must be the same that was witnessed in 1842-3.

It is to this unnatural expansion of a small population over large surfaces that is due the agitation of the question of improvement by the general government, one of the most dangerous now remaining to be settled. If the settlement and cultivation of new lands, and the formation of new States, proceeded naturally, the population would become sufficiently rich to be enabled to make their own roads and improve their own harbours; but as that cannot be the case under the existing system, they look to the government for aid. At this moment, it is proposed that a vast amount of land should be given, or sold at a very low price, to aid in the making of a road to California, a work that, if prosecuted with vigour, would be finished half a century before it would pay interest on its cost, because it would tend only to promote the further dispersion of population, and the further diminution in the productiveness of labour. We need concentration to render labour more productive, and to promote immigration; and if that be obtained, the natural and profitable settlement of the country beyond the Mississippi will go on so rapidly as to insure a connection with the Pacific, with advantage to all, in a very reasonable time. It is doubtful if there is a single instance on record of a road having been made with a view to attract population, or one that has been altogether dependent on *through* travel and trade, as this must for a long time be, that has not proved a failure. To make roads productive, they must pass through countries where men consume on the land a good portion of the products of the land, and grow rich, and not through

those in which, because of the absence of consuming population, every thing that is raised on the land is sent from the land, and its owners remain poor. If this road be now made, there will be great loss somewhere, and fall where it may, it will be a loss to the community.

The reason why such roads are unprofitable is, that the transportation upon them is almost entirely limited to bulky articles that must be carried at low freights. The most valuable of all commodities is man, and upon such roads the travel is small, for the people are poor, and must remain at home. Their products pay little to the road, yet the little that is left purchases but little of silk, or cloth, or other of the articles of merchandise upon which high tolls can be charged. Where, on the contrary, there is a large consuming population on the line, the way-travel is great, and the commodities that pass to market pay good freights, while the balance pays for much merchandise to be returned.

Applying these views to the means of intercourse with foreign nations, we may now, I think, see why it is that shipping grows with protection.

The merchandise we send to Europe is bulky, and the returns are compact, a consequence of which is that the outward cargo has generally had to bear almost all the charges of the voyage.

From 1830 to 1834, the reward of labour was, however, such as induced a great increase of immigration, and thus was secured a valuable return cargo, the receipts from which tended largely to diminish the charges on outward freights, and thus the planter and farmer were enabled to consume more largely of the merchandise of Europe, which pays high freights, and more of tea and coffee, while the demand for the raw materials used in manufactures, also enabled ships to bring them as part of their return cargoes, facilitating the transmission of our produce and merchandise to other parts of the world.

From 1835 to 1844, immigration was almost stationary. So was shipping. From 1845 to the present time immigration has grown rapidly. So has shipping. We now import 300,000 persons, and the usual allowance being two persons to five tons, it follows that shipping to the extent of 250,000 tons, making three trips per annum, is so employed. Freights to Europe are low, because the return cargo is large and valuable. Ships of the first class are now built expressly for the importation of men, and so will they continue to be, if the number of passengers shall continue to increase. With a diminution of it, the building of ships will diminish, and freights to Europe will rise, because a valuable return cargo cannot then be calculated upon. The rise of freights will, as a matter of course, diminish the number of articles that will bear exportation, and the quantity of merchandise that can be imported from Europe, while the diminution in the number of mouths requiring tea, coffee, and other similar commodities, will tend still further to diminish the tendency towards the building of ships.

Were we now importing a million of people, the shipping required for that purpose alone would be 830,000 tons, and freights to Europe would be almost nominal, for great numbers would go altogether in ballast. Whatever tends to increase the bulk of the commodities imported tends equally to diminish the cost of transportation, and to increase the export of the products of the farmer and planter. If we imported raw silk, we should import Frenchmen to manufacture it, and coffee for them to drink, and the ships that imported the silk, the men, and the coffee, would cheaply transport cotton or cotton cloth. If we import gutta percha, we obtain it from one who desires to buy cloth, and to whom cloth can then be cheaply sent. If we import gutta percha goods, we obtain them from men who have cloth to sell, and to whom cotton cannot be cheaply sent. If we desire, then, to increase

our commerce and our navigation, the object is to be accomplished by the adoption of measures that will bring the loom to take its place by the side of the plough. The harmony of the agricultural, manufacturing, and shipping interests would here appear to be complete.

With such an importation of men, there would be an annual addition of 1,000,000 with whom we would have *perfect* freedom of trade, uninterfered with by custom-house officers, sailors, or ships. At the end of ten years, there would be thus made an addition of twelve or thirteen millions of persons, who would consume twice as much cotton as is now consumed by the whole people of Great Britain and Ireland. The harmony between the views of the free-traders and those of the protectionists would thus appear to be almost perfect. The more the subject is examined, the more obvious does it become that the *only* road to perfect freedom of trade lies through perfect protection.

PLANTING.

A TABLE showing the Number of Plants required for One Acre of Land, from one foot to twenty-one feet distance from Plant to Plant.

DISTANCE.		NUMBER.	DISTANCE.		NUMBER.	DISTANCE.		NUMBER.
Feet.	Inches.		Feet.	Inches.		Feet.	Inches.	
1	0.....	43,560	6	0.....	1,210	12	0.....	302
1	6.....	19,360	6	6.....	1,031	13	0.....	258
2	0.....	10,890	7	0.....	889	14	0.....	223
2	6.....	6,969	7	6.....	775	15	0.....	194
3	0.....	4,840	8	0.....	680	16	0.....	171
3	6.....	3,556	8	6.....	602	17	0.....	151
4	0.....	2,722	9	0.....	538	18	0.....	135
4	6.....	2,151	9	6.....	482	19	0.....	121
5	0.....	1,742	10	0.....	436	20	0.....	109
5	6.....	1,440	11	0.....	361	21	0.....	99

A TABLE FOR MANURING LAND.

EXPLANATION.—The following Table is intended as a guide in ascertaining the distance and size of the heaps proper for expending a given number of loads per acre, or *vice versa*. In the left-hand column is placed the distance of the rows and of the heaps in each row, and at the top of the columns will be noticed the number of heaps intended to be made of each load; the point where the two meet gives the number of loads per acre which will be required for that purpose.

Example 1.—Required the number of loads necessary to manure an acre of ground, dividing

each load into 6 heaps, and placing them at a distance of $4\frac{1}{2}$ yards from each other? The answer by the Table is $39\frac{1}{2}$.

Example 2.—A farmer has a field containing $5\frac{1}{2}$ acres, over which he wishes to spread a mixen containing 82 loads of dung. Now 82 divided by $5\frac{1}{2}$ gives 15 loads per acre; and by referring to the Table it will be seen that the desired object may be accomplished by making 4 heaps of a load, and placing them 9 yards apart; or by 9 heaps at 6 yards, as may be thought most advisable.

DISTANCE OF THE HEAPS.	NUMBER OF HEAPS IN A LOAD.									
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
3 yards.....	538	269	179	134	108	89 $\frac{1}{2}$	77	67	60	54
3 $\frac{1}{2}$ ".....	395	198	132	99	79	66	56 $\frac{1}{2}$	49 $\frac{1}{2}$	44	39 $\frac{1}{2}$
4 ".....	303	151	101	75 $\frac{1}{2}$	60 $\frac{1}{2}$	50 $\frac{1}{2}$	43	37	33 $\frac{1}{2}$	30 $\frac{1}{2}$
4 $\frac{1}{2}$ ".....	239	120	79 $\frac{1}{2}$	60	47	39 $\frac{1}{2}$	34	30	26 $\frac{1}{2}$	24
5 ".....	194	97	64 $\frac{1}{2}$	48 $\frac{1}{2}$	38	32 $\frac{1}{2}$	27	24 $\frac{1}{2}$	21 $\frac{1}{2}$	19 $\frac{1}{2}$
5 $\frac{1}{2}$ ".....	160	80	53 $\frac{1}{2}$	40	32	26 $\frac{1}{2}$	22	20	17 $\frac{1}{2}$	16
6 ".....	134	67	44 $\frac{1}{2}$	33 $\frac{1}{2}$	27	22 $\frac{1}{2}$	19	16 $\frac{1}{2}$	15	13 $\frac{1}{2}$
6 $\frac{1}{2}$ ".....	115	57 $\frac{1}{2}$	38 $\frac{1}{2}$	28 $\frac{1}{2}$	23	19	16 $\frac{1}{2}$	14 $\frac{1}{2}$	12 $\frac{1}{2}$	11 $\frac{1}{2}$
7 ".....	99	49 $\frac{1}{2}$	33	24 $\frac{1}{2}$	19 $\frac{1}{2}$	16 $\frac{1}{2}$	14	12 $\frac{1}{2}$	11	10
7 $\frac{1}{2}$ ".....	86	43	28 $\frac{1}{2}$	21 $\frac{1}{2}$	17	14 $\frac{1}{2}$	12 $\frac{1}{2}$	10 $\frac{1}{2}$	9 $\frac{1}{2}$	8 $\frac{1}{2}$
8 ".....	75 $\frac{1}{2}$	37 $\frac{1}{2}$	25 $\frac{1}{2}$	19	15	12 $\frac{1}{2}$	10	9 $\frac{1}{2}$	8 $\frac{1}{2}$	7 $\frac{1}{2}$
8 $\frac{1}{2}$ ".....	67	33 $\frac{1}{2}$	22 $\frac{1}{2}$	16 $\frac{1}{2}$	13 $\frac{1}{2}$	11 $\frac{1}{2}$	9 $\frac{1}{2}$	8	7	6 $\frac{1}{2}$
9 ".....	60	30	20	15	12	10	8	7	6	6
9 $\frac{1}{2}$ ".....	53 $\frac{1}{2}$	26 $\frac{1}{2}$	18	13 $\frac{1}{2}$	10 $\frac{1}{2}$	9	7	6	6	5 $\frac{1}{2}$
10 ".....	48 $\frac{1}{2}$	24 $\frac{1}{2}$	16 $\frac{1}{2}$	12	9	8	7	6	5 $\frac{1}{2}$	4 $\frac{1}{2}$

THOROUGH-BRED HUNTERS.

LOOKING at the pace of hounds, and the manner of riding after them, which have so materially changed within the last half century, it is insisted upon by some that the hunter of the present day ought to be of full blood. Reasoning from analogy, indeed, between the powers and capabilities of one and another, we are decidedly in favour of that breed which has the greatest share of strength within the smallest compass ; and such is decidedly the character of the thorough-bred horse. Independently of this, the thorough-bred horse, when perfect, and with substance, is peculiarly fitted for what a hunter is called upon to perform ; and those persons who assert to the contrary, can only do so in ignorance of the nature of his constituent parts. He has more depth and declivity in the shoulders than the lower bred horse has, and is consequently clearer in his wind. By these means, he can better extend and elevate his fore-feet in going over rough ground, and at his leaps ; and, by the curve or circular figure he makes with his hinder-legs, he stands more secure on all kinds of ground, and, above all things, he bears being pressed better than any other description of horse ; for, although blown, he soon recovers his wind. Having said this, it may scarcely be necessary to add, that several of our first-rate sportsmen of the present day will not ride any thing that is not of full blood ; and such description of horse, when perfect in his work, as well as in his form, commands the highest price.

Nevertheless, the *necessity* for the thorough-bred horse in the field is belied, by the experience of all unprejudiced sportsmen ; and even in Leicestershire, where the best studs are to be found, not a twentieth part of the hunters are of that description. But this perhaps arises from three causes. First, there is a difficulty in procuring full-bred horses to carry even moderate weights, and speed is but a second attribute to a hunter. He must have sundry other qualifications ; and the most prevailing objections to the thorough-bred horse are generally these. He is apt to be deficient in substance to carry high weights over rough and deep countries, without trespassing too much on the virtue of his high descent. Secondly, he is inclined, and especially if he have been trained, to be shy of facing rough and thorny fences, by reason of the delicate nature of his skin, rendered so by repeated sweats in clothes, when in training. It often happens, indeed, that even the cheering influence of hounds, which has so much effect on other horses, will not induce him to take them. In fact, which may appear extraordinary, he does not appear to have in the field the courage of the half-bred horse. Lastly, his feet are apt to be small, in which case he sinks deeper in soft ground than does the lower bred horse, whose feet are larger and wider, and thus suffers more than the latter does in crossing a deep country. As for his powers of endurance under equal sufferings, they doubtless would exceed those of the cock-tail ; and, being by his nature what is termed a "better doer" in the stable, he is sooner at his work again than the other. Indeed, there is scarcely a limit to the work of full-bred hunters of good frame, constitution, and temper.

A sportsman, partial to thorough-bred hunters, should either breed them, or purchase them, not exceeding two years old. If he breeds them, he should select large and bony mares, putting them to horses who have hunting action, such as Tramp had, and several more we could name ; and, if he buy them, it will be his fault if he do not buy those of the right stamp. From their never having been trained, but ridden over rough ground in

their colthood, they would have freer and higher action, and, when castrated at a proper age, would very rarely fail making first-rate hunters. But it may be asked, why subject them to the enervating operation of castration, which, as Percival says, stamps their form and character with the seal of imbecility and pusillanimousness? Our answer here is, that we would not do it, if experience did not show that by far the greater number of entire horses, used as hunters, are either dangerous in a crowd, and when pressed upon in gateways; or given to refuse their fences, when they feel themselves somewhat distressed; and, if once well tired, are not to be depended upon afterwards. When free from these defects, they are doubtless superior to either geldings or mares.

PURCHASE OF A HUNTER.

Although it may not be necessary that a person should be perfectly acquainted with the mechanical structure of the horse's frame, according to the laws of nature, to render him a good judge of a hunter, yet, fortunately for such as have them to sell, vast numbers of persons purchase hunters from very slight experience of them, regardless of the proverb of, "he hath a good judgment who doth not rely on his own." There is also another proverb, prevalent, we believe, in Spain, which well applies here:—"He that would buy a mule without a fault must not buy one at all;" and, although faultless hunters may be as rare as faultless riders of them, we will offer a few hints to a person in the act of purchasing one, addressing him in the colloquial style.

First, bear in mind the country you are about to hunt in, whether flat, hilly, firm, soft, open, or enclosed, and refer to the remarks we have made on the sort of horse we have adapted to each; only be assured, that, in an open country, especially if a hilly one, nothing has a chance with a thoroughbred horse, in good form, and not over-weighted. Secondly, consider well your weight, and be sure to have at least a stone to spare. A light man on a light horse throws away all the advantage of being light, and can go no faster, or leap larger fences, than a heavy man on a strong horse, *for strength will be served*. Until you try him, it is hard to say what horse will make a hunter, but the following indices may induce you to try him:—If he appear well-bred, with a loose, bright skin, which may be called his complexion; observe that his hair does not stand hollow from the skin, particularly about the poll of his neck. If you find him standing over a good deal of ground, it is a sure sign that he has got length where it ought to be; not in the back, but from the obliquity of his shoulders, and the arm being set on at the extreme point of his shoulder, which so much contributes to the act of extension of the fore-parts in galloping, leaping, and clearing grips. Next examine minutely his thighs and hocks, being especially careful to observe the position of the point of the hock-bone. Above all things, avoid a short, and also an over-topped horse. The former will never carry you to your satisfaction, however good he may be in his nature; and the latter, from being too heavy for his legs, will seldom last many years. As for the minor points, common observation alone is wanting. Have his head placed in such a situation for inspection, as will enable you to satisfy yourself that he has perfectly organized eyes, free from incipient cataract, sometimes rather difficult to be detected; and as for his age, there are but two ways of satisfying yourself on that point. By his teeth till about eight years old; afterwards by the state of his legs, which are, in fact, the best test of his value, the best proof of what he has done, and the sure source of speculation as to what he may hereafter be expected to do. Observe, also, his

joints, that no material injury has been done to them by blows, &c., and that they are strong.

But the purchaser of a hunter must not trust to his eye. Neither must he be satisfied with him, how well soever he may gallop with him upon *sound* land. It is the peculiar excellence of "going well through dirt" that renders a horse valuable for all our best hunting countries; and no man can assure himself that a horse has this peculiar excellence, until he puts him to the test. The best method of doing it is this:—The rider should put him along at a good pace, with a slack rein, upon sound ground, letting him find himself all at once upon that which is soft and holding. If, on quitting the former, he cringes more than might be expected under the weight, and shortens his stroke much, he must not purchase him for a hunter. He may go well over a light, down country, but he will never distinguish himself over a heavy one, as he will be going in distress, when other horses are going comparatively at their ease. Horses possess gradations of excellence in this natural qualification or gift, more than in any other, but in it consists the *summum bonum* in a hunter; inasmuch as, whatever may be his other good qualities, they are all useless, when the acting parts are, from this cause—namely, deep ground—easily over-fatigued. The writer himself has good reason to acknowledge the soundness of this advice in the trial of hunters prior to purchase. He once gave 220 guineas for a horse, from seeing him go well over the Oxfordshire hills, where the ground was sound: when he rode him in the vale of Bicester, in the same county, where the ground was of an opposite nature, he proved to be worth little more than as many shillings. With regard to a horse's wind, a purchaser must not judge hastily of that, in a horse not in strong work. Should he not perceive any thing like whistling in his respiration, when he puts him along at a quick pace, and his chest is capacious and deep, and his head well set on, he is not to reject him, in case he appears blown by a short gallop. Condition and work will rectify that; but many a good hunter has been rejected on this account, by persons not taking into consideration the state of his bodily condition, in a trial of this nature; and the writer can produce an instance that bears on this point. He purchased a horse from a London dealer, and on his arrival in the country, a neighbour wished to have him, and at a pretty high premium, as the term is, for he was very perfect in his form. On having him examined, however, after giving him a gallop, by a veterinary surgeon, he was pronounced thick-winded, and the deal did not take place. He, however, turned out a capital hunter, and became the property of the present Lord Wenloch, then Mr. Beillby Lanley, at a large price.

The price of the hunter varies with the times, and, no doubt, is as much regulated by the price of wheat as the quartern loaf is. During the war prices, the sum of a thousand guineas was occasionally given, and that of five hundred guineas frequently.* Half the last-mentioned sum now commands a first-rate hunter. But first-rate horses, in all ages of the world, have ever produced extravagant prices. It is recorded of Alexander the Great, that he gave four Roman talents for Bucephalus, which approaches near to the Melton Mowbray prices, and those, we may safely conclude, stand at the head of the list.

*\$2500!



THE HACKNEY.

UNDER this term are comprised the following:—the Cover Hack, the Park Hack, the Lady's Horse, the Roadster, the Cob, the Galloway, and the Pony.

The difficulty of procuring really good hacks is admitted by all persons who have kept them for the various purposes of either business or pleasure,
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and for the following obvious reason, — that very few people try to breed hackneys, therefore, although we require them to be nearly perfect in shape and action, (and perfect they should be to be “really good hacks,”) they may be said to be failures in the breeding stud after all.

THE LADY’S HORSE.

The lady’s horse is, after all, the most difficult to obtain, because he ought to approach very near to perfection. His paces, mouth, and temper, should each be proportioned to the power and capability of his rider; and he should be proof against alarm from either noises or sights which otherwise might cause him to run away. This description of horse should likewise be well bred, as in that case his action will be easier, and his appearance and carriage more in character with the generally elegant appearance of his rider. His pace should be the canter; the trot causes an ungraceful movement in the person of a woman, to enable her to rise to it; and if she do not rise to it, she is much shaken in her seat. Neither is the form of the side-saddle fitted for the trot; and the canter of a well-bitted horse is more safe, because his haunches are more under him in that pace than they can be in the trot. A good bold walk, however, with the head in proper place, is essential to a horse that has to carry a woman; and his action should be very true, that is, he should not “dish,” or throw his legs outward, as the term is, in any of his paces, or he will cover the lower garments of his rider with mud when the roads are wet and dirty. To provide against the latter inconvenience, however, all horses intended for this purpose, should not be much under fifteen hands and a half in height, which size corresponds with the lengthened drapery of a lady’s riding costume. As a preventive against accidents, ladies’ horses, however well broken and bitted, should not be too highly fed; and, if at all above themselves, should be ridden by a careful servant, with good use of his hands, before ladies mount them. It is, however, an acknowledged fact, that horses go more quietly under women than they do under men, which is accounted for by the lightness of their hand, and the backward position of the body, in the saddle. We have, in fact, known several instances of horses being very hard pullers with men, standing up in their stirrups, and, consequently, inclining their bodies forward, but going perfectly temperate and at their ease under women.

FORM—HEIGHT—ACTION.

The power and parts conducive to action in the roadster, or hackney, are derived much from the same shape and make as we have shown to be best fitted for the hunter; but it is desirable that he should be more up in his forehand than the hunter is required to be, as such form gives confidence to the rider. *The most dangerous* form he can exhibit, if we may be allowed such a term is, with his fore-legs standing too much behind the points of his shoulders, *and those points loaded*. Even with the best formed hinder-legs, the centre of gravity, being thrown so far forward beyond the pillars of support, is, in this case, with great difficulty preserved on the horse making a stumble; but with straight hinder-legs, a horse so formed in his fore-quarters is only fit for harness, where he can recover himself by the assistance of his collar, having no weight on his back. Provided a hackney do not cut his legs, by striking one against the other, which is oftener caused by imperfection in the upper than the lower extremity of the legs, he is not to be rejected because he may turn out his toes a little, some of the very best, fastest, and safest road-horses being so formed. Cutting the hinder-legs is a worse failing than cutting the fore ones, as it is a certain sign of

weakness ; and although we may be told that shoeing will prevent it, we bring to our recollection the old adage, that "a goose always goes like a goose." What is called the "speedy cut" with the fore-legs, arises from excess of action, and is a great objection, by reason of the wound given to the leg, which is struck just under the knee. Many good hunters, especially when ridden in hilly countries, such as parts of Surrey, where they traverse hills on loose and stony ground, are subject to this failing, which is remedied by a boot ; and, after all, the danger attributed to speedy cut, in throwing horses down, is much over-rated.

Six years back, the writer saw a horse go remarkably well with Mr. Ramsay's hounds, in Scotland ; but Scotch sportsmen would not purchase him, because he was given to "speedy cut." The writer recommended him to one of the hardest and best riders of the day—Sir David Baird—then hunting in Leicestershire, who purchased him, and was carried brilliantly by him for two seasons, when, unfortunately, he was deprived of him, by an accident.

The height of a road hackney must be regulated by the size of the person to ride him ; but, generally speaking, from fourteen hands to fourteen hands and a half is the proper height. His strength must also be thus calculated, for a light man does not ride pleasantly on a horse equal to double his weight. But a road hackney should have strength of shoulder, with a round barrel, but not a large carcass, which only wears out his legs. His constitution and feeding can only be proved upon trial ; but there are certain indices, such as deep ribs, hardy colour, brown muscle, &c., which very rarely deceive us. As to the necessity of well-placed hinder-legs, it is most clearly shown by the answer given to the following question :—If a horse make a serious blunder forward, and the centre of gravity of his body fall beyond the pillars of support, and is for a moment lost, what restores the equilibrium ? Is it merely the chuck under the chin to an animal of his bulk and weight, and that "chuck" given perhaps by the weak, powerless wrist of a feeble old man, or delicate young lady ? No : the main effect of the bit, or curb, in this case is, first, warning the horse of his danger ; and, next, by the momentary raising of his head, he is better able to bring a hinder-leg *instantly* to his assistance, by advancing it under his body, and thus restoring the equilibrium.* In the walk, in fact, the horse actually begins to move by advancing the hinder-leg under the body, before the fore-leg quits the ground ; and if he did not do so, there would be no equal support for the body, during the suspension of the fore-leg in the air ; nor could the body be moved forwards, until the hinder-leg had, by quitting its station, taken a new point of support. Seeing, then, that in the walk, as in all other paces, the centre of gravity in the horse is maintained, as well as the body propelled, by the action of the hinder-legs, the greatest attention should be paid to the position and action of them in the hackney, as the best safeguard against his falling. We should observe, then, when he is exhibited to our view, that, in his walk, the hinder-foot oversteps the fore-foot, at least a shoe's length, which a horse with straight, ill-formed hinder-legs cannot do ; and if such action be accompanied by generally good hind-quarters, it is a great indication of safety, so far as one-half of the body of the horse is concerned. But as the false step is made, not with the hinder, but the fore-leg, the chief safeguard against falling is to be found elsewhere, namely, first, in the length of the shoulder, which throws the centre of gravity further back than a short one ; and, secondly, proceeding also from the free use of the shoulder, in the act of setting the fore-foot down on the

* Doubtful.—*Ed. P. L. & A.*

ground. It is a general but very mistaken notion, that the safety of a roadster depends upon his lifting his fore-feet high from the ground, when he is said to "go well above his ground;" whereas it all depends on the manner in which he places them down upon it. Not only are the highest goers often the most unsafe to ride, for, when they do fall, they fall with a violence proportioned to the height of their action;* but, although we do not advocate such extremes, there are thousands of instances of horses going *very near* to the ground, and never making a trip. It is, however, a well established fact, that if the form of a horse's shoulder, and the consequent position of the fore-leg, enable him to put his foot to the ground *flat*, with the heel well down, his lifting up his foot high is not at all necessary; whereas, on the other hand, if, by any improper position of the leg, issuing out of a short, upright, ill-formed shoulder, the toe touches the ground first, and, as it were, digs into it; no matter how high such a horse may lift up his leg in any of his paces, he will always be dangerous to ride. And this will be clearly shown, if we consider the position of the fore-leg. When off the ground, or in action, it is bent in the form of a *C*, and the foot suspended in the air, turning inwards, with a curve towards the body. When in this state, were the foot to come in contact with a stone, or any other substance, it would pass over it without resistance, the limb being at that time in a flaccid state; but when it approaches the ground, the limb being extended, and having the whole weight of the fore-quarters about to be thrown upon it, if it strike against a stone, or any hard substance, then the case is greatly altered, and a stumble is the inevitable consequence. The base now requires to be firm and even, which it can only be by the foot being placed flat upon the ground. Man, in fact, walks very near the ground, but his toe rarely strikes it. If it did so frequently, he would soon become a cripple, putting falling out of the question. His action proceeds from his hips; that of the horse, as regards the fore-legs, from his shoulders; but the principle is the same with each; each is a piece of curiously-wrought mechanism, and according to the correctness of that mechanism is their action true. A wrong notion, however, prevails here, which may lead the purchaser of a hackney astray. It has been asserted by various writers, that, if the shoe of a roadster be found worn at the toe, it is a sure sign of his possessing the dangerous action to which we have alluded. This is false; many horses wear at the toe, solely by the act of picking up the foot, and quite independently of placing it down. That many hackneys, however, fall from their shoes being neglected, and suffered to wear too much at the toes, we are well aware, as well as from their pressing upon the heels and quarters, from the want of being removed in proper time. When a horse is given to wear at the toe, the wearing part should be steeled.

CAUSES OF STUMBLING.

The best method of ascertaining the manner of putting down the foot, on which we have shown the safety of a hackney depends, is, to ride a horse with a slack rein, on a foot-path, on which there are trifling undulations, scarcely perceptible, but sufficient for our purpose. If he walk smoothly over such ground, and do not strike it with his toe, we may be sure he puts his foot properly down, and will not, from that cause, be a tumble-down. But there are various ways in which horses fall on the road; bad shoeing, as we have already said, being one of them, and bad condition another. What is called a false step, very different from a stumble, may occur to any

* Fault of certain horses bred in Virginia.—*Ed. P. L. & A.*

horse, and is occasioned by his accidentally putting his foot on a loose stone, that rolls away from under it, when, of course, his footing is lost. In this case, his chance of recovering himself is in his shoulders being oblique and lengthy, (for upright shoulders are always short,) and well placed hinder-legs. Thrushes and corns are also the cause of stumbling; as likewise is starting, one of the worst failings a hackney can have. In some horses it is a nervous affection, rather difficult to account for in animals of such strength of frame; and it often arises from imperfectly formed eyes, such as flatness of the cornea, or outward surface of the eye, generally a small one, causing short-sightedness. In the latter case, this fault in a hackney may be guarded against, by employing a veterinary surgeon to inspect him previous to purchase.

The old adage of "No foot, no horse," applies particularly to the road-horse. The hunter can cross a country upon feet that are very far from good; and by the help of bar-shoes, the coach-horse, with no weight on his back, and with the support the harness gives him, gets pretty comfortably over his stage on unsound feet; but the road-horse must have sound feet. Previously to the use of horse-shoes, the value of a solid hoof was so great as to have been made the image by which the prophet Isaiah set forth the strength and excellence of the Babylonish cavalry, "whose hoofs," says he, "shall be counted as flints." Both Homer and Virgil mention it as an indispensable requisite in a good horse, the latter making it to resound as it strikes the ground,

"Et solido graviter sonat ungula cornu."

We are not going here to enter on a long discussion upon the foot, but only to observe, that the wide hoof and expanded heel of the hunter is not so essential to the road-horse as many persons suppose. Indeed, the hoof that has been found to stand *severe* road-work best, is one rather high at the heel, and not very wide, provided the pastern above do not approach too near the perpendicular; forming what is called "an upright pastern," which, by the jar the foot receives from it, when it comes to the ground, is nearly certain to produce disease. The strong foot, however, of which we are speaking, is one that requires care, by being frequently drawn out with the knife, to prevent its becoming too strong; and by giving moderate pressure to the frogs, to prevent the heels getting nearer together than we find them, and they already approximate to contraction in a foot of this description. The just form of the hoof in front, upon which mainly depends its form underneath, is said by Clarke to be at an elevation from the ground of thirty-three degrees,* and we are inclined to think, that a much greater elevation than this would approach too near the perpendicular, for any kind of foot. As the inner heel or quarter has more weight thrown upon it than the outer, it is the principal seat of corns and sandcracks, for which reason great care should be taken that an even bearing to the whole of the crust be given by the smith to the foot of the hackney, previously to his setting on the shoe, the inner heel being given to wear away more than the outer on that account.

* White says forty-five.

EXPERIMENTS WITH MANURES.

BY ROBERT MONTEITH, ESQ. OF CARSTAIRS.

1. OAT CROP, 1843.—Part of a field manured with 267 lbs. of guano, at the cost of 31s. per imperial acre, produced per acre.....59 bushels.

Manured with 10 bushels bone-dust, at the cost of 23s. 4d. per imperial acre, produced per acre.....43 do.

The difference may be stated as follows:

Cost of guano 31s. produce 59 bush. at 2s. 6d. £7 7 6

Cost of bones 23s. 4d. do. 43 do. do. 5 7 6

7s. 8d. £2 0 0

Deduct difference of manure..... 0 7 8

Leaving in favor of Guano£1 12 4

2. HAY CROP, 1843.—To part of a field, manured the previous year with farm-yard dung, was given 267 lbs. of guano per imperial acre, at the cost of 31s. and the *extra produce*, per acre, was 22 cwt. of hay, which, at 3s. per cwt. is.....£3 6 0

Deduct expense of guano 1 11 0

Leaving in favor of guano £1 15 0 per acre.

3. WITH TURNIP, 1843.

No.	Quantity of land tried	Description of manure tried, and quantity per imperial acre.	Cost of Dung per acre	Cost of other Manures per acre.	Total cost per acre.	Produce per imperial acre stored Nov. 15, 1843
	Acre.		£ s. d.	£ s. d.	£ s. d.	Tons. Cwt.
1	$\frac{1}{2}$	Guano 4 cwt.....		2 8 0	2 8 0	11 8
		<i>Yds.</i>				
2	$\frac{1}{2}$	Dung 28 Sulphate of Soda, 1 cwt.....	5 12 0	0 4 0	5 16 0	9 8
3	$\frac{1}{2}$	" 28 Burned Bones, 6 cwt.....	5 12 0	2 2 0	7 14 0	7 11
4	$\frac{1}{2}$	" 28 Bone-dust, 20 bushels.....	5 12 0	2 6 8	7 18 8	7 2
5	$\frac{1}{2}$	" 28 ".....	5 12 0		5 12 0	4 19
6	$\frac{1}{2}$	" 28 Gypsum, 2½ cwt.....	5 12 0	0 8 9	6 0 9	6 1
7	$\frac{1}{2}$	" 28 Guano, 4 cwt.....	5 12 0	2 8 0	8 0 0	7 13
8	1-16	" 28 Beech-ashes, 48 bushels.....	5 12 0	0 12 0	6 4 0	5 12
9	1-16	Gypsum, 6 cwt.....		1 1 0	1 1 0	a failure.
10	1	Bone-dust, 25 bushels.....		4 3 4	4 3 4	9 6
11	1	Do. 12 bushels, and 133 lbs. guano		2 14 3	2 14 3	11 15
12	1	Guano, 356 lbs.....		1 18 2	1 18 2	11 0
13	1	Guano, 267 lbs.....		1 8 7	1 8 7	10 15

November 30, 1843.—The turnip crop on the field in which the above experiments were tried was fully one-third deficient in quantity from crops generally grown on such land in this

part of the country, the soil being heavy and under medium quality. All the turnip crops in this neighborhood are, however, from one-third to one-half deficient this season.

EXPENSE OF KEEPING HORSES.—In a late English Monthly Magazine, there is an elaborate essay on the winter and summer keeping of Farm Horses. Though the whole of it is interesting to read, the articles of food, brought into the comparison, are so different from those in use in our country, that it would not do to give up the space that the whole essay would occupy. But look here at the conclusion to which the writer arrives:

Thus, then, it is seen that the cost of keeping each horse upon a farm of 120 imperial acres of heavy land, all under crop, is about £8 9s. 5d. during the five summer months, and £12 12s. 2½d. for the seven winter months, or in all £21 11s. 7½d. being a saving of £2 2s. 2½d. in favor

of bean straw and boiled mashes as compared to hay and hard corn, for the winter; and a saving of £2 8s. 9d. in the case of posting horses for a period of six months; or a clear gain of £18 9s. 8½d. to the farmer on the winter keeping of nine horses, and of £131 12s. 6d. to the postmaster on fifty-four horses during the winter—no small matter in these times, taken in connection with the positively improved condition of both classes of horses, and the regular performance of ordinary work in both cases. Otherwise the comparative saving would be of little avail, were the horses not at the same time found equal, and more than equal, to their ordinary work; for no greater error can be committed by any farmer than to allow his horses to fall off for want of nutritious provender, especially in winter, with the prospect of long days of severe spring labor before them.

CULTURE OF BARLEY.

Dear Sir: The various injuries to which the wheat crop is obnoxious in Maryland has set some of the best farmers there to casting about for a substitute less liable to the ravages of insects and the casualties of the seasons. Some think of having recourse to barley as the most promising alternative, and, being almost destitute of practical experience, have requested me to obtain for them the best information from persons most conversant with its culture in this State, where it seems to constitute an important staple in your system of husbandry. I pray you, therefore, to excuse my asking you (being persuaded that much practice, with your habits of close observation, has made you familiar with the subject) to give me information on all the points upon which you may suppose a farmer would desire to have light, who is altogether in the dark—as, for instance, in respect to the kinds of barley, the time of sowing, and quantity to the acre—the kind of land (and preparation thereof) best adapted to it—whether or not it serves well as a protection to a grass crop, or whether it is not liable to injury, or to much difficulty in the process of curing, when used as a covering to grass. Do you find it nutritious and commendable as food for stock, and for stock of what kind? and how prepared when so used? What is its usual product per acre (and its price) as compared with wheat, corn and oats?

My own ignorance of the subject, and the haste with which I write, may have led me to overlook some points material to a thorough understanding of the culture and economy of barley husbandry; in which case, I beg you to supply what may be needful to a full development, for the benefit of gentlemen who, as I can confidently undertake to say, are not given to hiding their own lights under a bushel, when the communication of anything they know can be useful to their brother farmers. If you could conveniently furnish me with such reply as you may be kindly disposed to make, within the first week of October, you would greatly oblige

Yours, with esteem and respect,

J. S. SKINNER.

To H. S. RANDALL, Esq.

CORTLAND VILLAGE, N. Y., September 26, 1846.

Dear Sir: I employ my first leisure in answering your inquiries on the subject of barley and its cultivation.

1. *Varieties.*—Barley (*hordeum distichum*) is of two general varieties, known as winter and spring barley. The former is not cultivated in this State, that I am aware of. It is said to be easily winter-killed; but on lands which are kept constantly covered with snow until the beginning of warm weather, or on those which are not subject to freezing and thawing in winter and spring, it is better and produces heavier grain than the spring variety. It can be harvested in time for a second crop of spring barley, in favorable situations.

Spring barley is subdivided into the Siberian, skinless, sprat, chevalier, etc.; but the two varieties most commonly known and cultivated are the “six-rowed” and the “two-rowed.” The six-rowed has three seeds united at the base, at each joint of the *rachis*, on each side alternately; the two-rowed has but one row of seeds on each side of the *rachis*. It puts forth three flowrets on a side, at each joint, like the preceding, but the outside ones are barren. The “four-rowed” is but a deviation from the six-rowed.*

There is but little difference in the yield of the six and the two-rowed. The former is about a week the earliest, and, for reasons which I am unacquainted with, usually is quoted two or three cents higher per bushel in the New-York market.† Both bear the same price in the country markets; if there is any differ-

* The varieties of barley will be illustrated when we come to that subject in the republication of Stephens's Book of the Farm.

† Some experienced manufacturers say that there is, perhaps, no intrinsic difference in quality, but that the two-rowed requires more time and care to extract thoroughly its qualities.

ence, the two-rowed is preferred, it being the largest and plumpest grain. No difference is perceptible in the varieties as food for stock. The two-rowed is much the most generally cultivated in this region.

2. *Time of Sowing*.—As early in the season as the ground can be got into proper condition, is with this, as with all the other cereal grains, the best time for sowing. The early crops are almost invariably the best. Barley, however, requires that the ground be in a dry, mellow condition at the time of sowing. It will do to sow it late—as late as oats—with no greater depreciation in the crop than follows the late sowing of the latter. It is customary with our farmers to get in their spring wheat first, barley second, and oats third.

3. *Quantity of Seed Sown*.—Full three bushels are required to the acre. Of the two-rowed, the grains being larger, I sow at least three bushels and a peck.

4. *Kind of Land adapted to it*—Dry loamy or gravelly soils; but it will flourish in any of our loose soils which are sufficiently rich and dry. It fails on stiff clays, and on all wet, cold lands.

5. *Preparation of the Soil*.—It requires about the same preparation, by plowing and harrowing, as spring wheat. It requires land, too, as rich as prime wheat land. On poor and worn-out soils, oats are more profitable. It has one peculiarity which distinguishes it from all the other cereal grains: it will yield well, and the ears will fill, on highly manured lands, on which the others would run to straw, fall down, and entirely fail to fill. Barley, under such circumstances, will fall down, like the other grains, but the ears will fill when it is lying nearly flat on the ground. I always have it, therefore, follow highly manured hood crops, in my rotation. I frequently apply sixty two-horse loads of manure to the acre for turnips. If I follow them with wheat, it always fails; and it would require no experiment to demonstrate the folly of sowing oats under such circumstances. Barley will generally fall down, but I have raised sixty, and even more, bushels per acre on soils in that condition. This year I had a small patch of it mixed with flax, on excessively manured land adjoining a barn. The growth was extremely rank, and a whirling wind threw it down, and twisted and tangled it in a manner I never before saw equaled, about the time the grain began to set.—While this went on ripening, the roots put out a new set of shoots, which stood up. At harvesting, the first heads were full of fine plump grain, and the barley, though much smaller, was sufficiently advanced to cure, on the second growth.

6. *As a Covering for Grass*.—It is generally preferred, by those who cultivate it, to any other crop, for this purpose. I have never had my grass seeds fail with it.

7. *Liability to Injury*.—It is less liable to injury than any other grain crop with which I am acquainted. Its tendency to fill, when down, has been alluded to. No insect enemies have yet attacked it, so far as I am aware. I have never known it to rust, though oats are very prone to on my lands. It has a remarkable power of resisting drouth. Its greatest enemy is continued rainy, warm weather, at the time of harvesting. It sprouts readily after it is cut, which seriously injures the grain. I have known crops of it injured in this way, though I never had one of my own thus injured, nor do I think it very necessary.

8. *Difficulty in the Process of Curing*.—It cures with as much facility as any other grain, and is cut with as little labor, when taken in season. It should be cut when the kernels are in a doughy state, and while the straw is somewhat greenish, and stands erect. Left until dead-ripe, the straw “crinkles,” and is cut with more difficulty, and the grain shells out in handling it. When it stands, it is cut with the cradle, raked and bound, exposed in shocks (where two rows are set up loosely together, without any cap) for a day or two, and then carted in. If the straw is green, it is generally left a day or two in swath, before binding; but care must be taken that it does not cure too much, on account of shelling. If the crop is down or “lodged,” it is cut with a scythe, suffered to lay on the ground a day or two, raked into swaths and cocked like hay, or, if already dry enough, carted in. It may be raked with a horse-rake, if not too dry. This is a cheap way of harvesting barley, but it is liable to the objection that the unbound straw takes up an entirely disproportionate amount of barn-room. It is also difficult to stack it unbound, the straw being short and singularly “slippery.”

9. *Its Value for Feeding Stock*.—According to the careful experiments of Thaër, the comparative values of wheat, barley and oats, in feeding cattle, are

represented by 47, 32 and 24, the *measure* being the same. It is considered by our farmers, by measure, to be about half way between oats and corn, in its nutritive properties—perhaps rather nearer the corn than would be indicated by such middle point.

I have fed it to all kinds of farm stock, and like it for all, excepting carriage-horses. For these, oats are preferable. But for draught-horses, oxen, cows, young cattle, sheep and swine, it forms an excellent feed. I prefer it to corn for draught-horses, and also for other kinds of stock, excepting swine, where the object is not directly to fatten for slaughter. I prefer it, because I consider it less stimulating and less cloying. For fattening swine, nothing can exceed corn; but barley is beginning to be used quite as generally for that purpose in this region. Very fat hogs eat it better toward the last than they do corn. No difference can be detected in the pork made from the two grains.

10. *Preparation.*—It should be ground for all kinds of stock. Some soak it soft and feed it unground, but it is poor economy. The meal is fed dry to horses and sheep; mixed with water or milk, and fermented until it acquires a sweet taste, to swine; and either dry or cooked, to cattle.

11. *Product per acre and Price compared with other Grains.*—In my answer to Mr. Walker's "Treasury Circular" (in 1845), I submitted the following tables, which I believe to be essentially correct, and which include most of the information you desire under this head:

GRAINS.	Cost per acre.	Average number of bushels per acre.	Average value of stalks or straw.	Total value, estimating grain at average prices for the last five years.	Net profit per acre.
Indian Corn.....	\$15	30	\$5 00	\$20 00	\$5 00
Spring Wheat.....	9	12	1 00	12 40	3 40
Barley.....	9	28	1 25	13 29	4 29
Oats.....	7	38	1 25	10 18	3 18

AVERAGE PRICES OF GRAINS FOR FOURTEEN YEARS.

YEAR.	Wheat.	Ind. Corn.	Barley.	Oats.	Buckwh't	Peas.
			Cts.	Cts.	Cts.	Cts.
1832.....	\$1 12	\$0 56	65	35	44	60
1833.....	1 12	56	65	38	44	62
1834.....	1 06	62	60	37	40	62
1835.....	1 25	69	75	38	56	75
1836.....	1 38	87	75	40	50	75
1837.....	2 00	1 00	75	44	62	80
1838.....	1 60	88	70	42	50	75
1839.....	1 50	80	62	38	50	62
1840.....	1 25	62	50	30	38	50
1841.....	1 07	62	50	28	38	50
1842.....	1 06	60	45	25	38	50
1843.....	88	44	40	20	31	40
1844.....	85	44	40	20	30	44
1845*.....	90	50	40	25	31	40

* The prices of 1845 estimated up to the 15th of October.

It will be understood that the average product above stated includes every variety of land and cultivation. My own crops of barley have averaged not less than 38 or 40 bushels per acre for ten years, and I have raised 65 bushels per acre in some cases.

12. *Miscellaneous Remarks.*—Having replied to your questions *seriatim*, I will, in pursuance of your request, make such other suggestions as occur to me, which I think would prove useful to those unacquainted with the nature and culture of barley.

Climate.—Barley is cultivated and comes to perfection in a greater variety of climates than any other grain.

Mixing it with other Crops.—The two-rowed barley is frequently sown mixed with oats, and in some instances with flax. I have tried both. They do very well together, but on the whole I prefer separate sowing.

Effect of Barley on Soils.—Barley is generally considered a less exhausting crop than oats. Such is my impression, but I am not able to adduce any decisive proof.

Barley Straw.—If the barley is cut quite green, and the straw is cured so that a considerable portion of it retains this color, it is eaten by cattle, in cold weather, almost as readily as hay. It is softer than the other straws, and is much more readily eaten by all kinds of stock, where the process of cutting is not resorted to. I usually cut my oat straw for my horses; I feed the barley straw uncut to my cows. For two winters, it has been my custom to give the latter two feeds of barley straw a day, and one lightish one of hay, with a feed of from six to eight quarts of turnips. They will do as well on this as on a full supply of hay, and it is much cheaper. I have also fed barley straw without hay, giving turnips, or a little barley meal. Either way is cheaper than wintering on hay exclusively, and with proper management will do as well.

Barley in the Rotation of Crops.—It is customary among the best farmers in this region, to take but three grain or root crops before seeding down. The first is generally a hoed crop, on good soils, viz., corn, potatoes and turnips. The first crop receives all the manure. Where the manure is not applied very plentifully, wheat is often the second crop, and barley or oats the third, with grass seeds. But it is common, with many (who make large quantities of manure), to manure their turnips, potatoes, and as much of their corn as they can, very bountifully—say from 40 to 60 loads per acre. In this case barley is the second crop, followed by wheat and grass seeds. On ordinary lands I have sometimes sown oats on the inverted sward without manure; followed them with hoed crops, well manured; and then seeded down with barley. This leaves the land in capital condition for good, luxuriant meadows. On some lands, spring wheat would be more profitable than oats as the first crop in this series. But whatever the order of my rotation, barley invariably constitutes one of its crops. A very extensive and successful farmer here takes but two crops before seeding down, viz., roots or corn highly manured, then barley with grass seeds. He prefers to purchase his oats, and raises barely enough wheat for his own use.

Advantages of Barley over Indian Corn.—On prime corn lands, and where force enough can be obtained to manage it, no crop will yield a better profit than corn; indeed, no one, perhaps, equals it. But it requires the choicest land, great quantities of manure, a great amount of labor, and a favorable climate. On no ordinary farm can all the arable land be kept in a suitable condition for corn; on many farms the requisite amount of manure cannot be had. It is difficult, and would be here impossible to obtain sufficient labor to manage the crop, if it became anything like a general substitute for the other grains. And finally, on many of our hill lands corn is always a precarious crop, even with the best management, by reason of the shortness of time between the spring and autumn frosts.

When any of these considerations prevent the rearing of corn, I regard barley as the best substitute. It has these advantages over the former: it does not absolutely require so rich land as corn, though, as I have said, it will yield a profitable return on the very richest land. Its cultivation requires no more labor than the cultivation of wheat. It will ripen in the shortest season and on the frostiest lands. Its early ripening gives it an advantage over corn under any circumstances, for summer and fall feed to cattle and swine. Where pork is fattened to any considerable extent, this is an important consideration. Pork is made nearly a half cheaper in warm than in cold weather; and to make its production profitable, swine should be at least one-third fattened by the time corn is ripe.

Threshing Barley.—This may be done by machines, by the flail, or by horses. It threshes more easily than wheat or oats. Much is written about "hummeling," or breaking off the awns or beards from the grain. I thresh out the grain as I would oats, and that is all. It is then fit to be sent to the mill to be ground into meal for stock.

Storing Barley.—I put it into bins holding, say one hundred bushels each, in a granary; and I never have had occasion to move it or shovel it over, and I never have had any receive injury.

You will please excuse me for the desultoriness of these rapid remarks—and, believe me, sir,

JOHN S. SKINNER, Esq.

Your friend and obedient serv't,

HENRY S. RANDALL.

REARING CATTLE.

THE REARING OF CATTLE, WITH A VIEW TO EARLY MATURITY, AS PRACTICED IN BERWICKSHIRE, ENGLAND.

BY MR. JOHN WILSON, EDINGTON MAINS, BERWICKSHIRE.

THE valley of the Tweed has long been famed for the rearing and fattening of cattle, its rich pastures, warm turnip-soils, and proximity to England, affording peculiar facilities for prosecuting this branch of rural economy. The "Short-Horns" were early introduced into it, and soon became its established breed; and, though still inferior to the Tyneside herds in symmetry, color, and grazing quality, yet nowhere, perhaps, are they brought to market, at two years old, in such perfection of weight and fatness.

The production of beef, at the quickest and cheapest rate, being the object in view, the first requisite is a stock of cows possessing qualities suitable for this purpose. Accordingly, they should be good milkers—able to keep at the rate of two and a half to three calves each—of a kind known to have a tendency to fatten readily, and to come early to maturity, and of a structure likely to produce a vigorous, well-grown steer. In other words, they must be good Short-Horns; only having more regard to their milking properties than is usually done by breeders of bulls. And here it may be well to notice, that it is in general highly inexpedient for the beef-grower; the farmer who depends largely on his regular cast of fat cattle—to attempt breeding his own bull. *It is only a few individuals in any district who have the taste and skill requisite for this difficult department of the business, not to mention the large capital which must necessarily be invested in it, the precariousness of the return, the greater liability to casualties of such high-bred animals, and the additional expense of their housing and maintenance.* On Tweed-side, the breeding of bulls is confined to a very limited number of persons, chiefly Northumbrians, who, by devoting their whole attention to this department, are able, from year to year, to furnish a class of bulls which are steadily improving the general breed of the district. The contrary practice is at this moment compromising the character of this valuable breed of cattle in several districts of Scotland into which they have been more recently introduced. *Made wiser on this point by experience, the farmer of the Border purchases from some breeder of established reputation a good yearling bull, which he uses for two or three seasons, and then replaces by another in like manner.* This bull serves his own cows and those of his kinds, and some of the neighboring villagers', and thus, though his own stud be limited to six or eight cows, he can select from the progeny of his own bull as many calves as he requires to made up his lot, and has them more uniform in color and quality than could otherwise be the case. As the male parent, among sheep and cattle, is known to exert by far the greatest influence in giving character to the progeny, and increasingly so in proportion to the purity of his breeding, it is evidently much for the advantage of the beef-grower to spare no reasonable trouble and expense in

obtaining a bull of thorough purity, and then to select his calves with the most scrupulous attention. From overlooking all this, how often may cattle be seen, on the best of land, too, which can only be fattened at an enormous expense of food and time, and after all, are so coarse in quality as to realize an inferior price per stone. Occasionally a few beasts of the right sort will seen in such lots, which, by going ahead of their fellows, to the extent of £4 or £5 a-piece of actual market value, show what might have been done by greater skill or attention on the part of the owner.

It is very desirable to have all the cows to calve betwixt the 1st February and 1st April. If earlier, they will get almost dry ere the grass comes, and calves later than this will scarcely be fit for sale with the rest of the lot. When a calf is dropped, it is immediately removed from its dam, rubbed dry, with a coarse cloth or wisp of straw, (this being what the cow would do for it with her tongue, if allowed,) and then placed in a crib in the calf-house among dry straw, when it receives a portion of its own mother's first milk, which, being of a purgative quality, is just what is needed by the young animal. For a fortnight, new milk is the only food suitable for it, and of this it should receive a liberal allowance thrice a-day; but means should now be used to train it to eat linseed-cake and sliced Swedish turnip; and the readiest way of doing so is to put a bit of cake into its mouth immediately after getting its milk, as it will then suck greedily at anything it can get hold of. By repeating this a few times, and placing a few pieces in its trough, it will usually take to this food freely, and, whenever this is the case, it should have as much as it can eat, that its allowance of milk may be diminished, to meet the necessities of the younger calves which are coming in succession. This is of the greater importance that it is always most desirable to avoid mixing anything with their milk by way of helping the quantity. When a substitute must be resorted to, oatmeal porridge mixed with the new milk is perhaps the best. Sago of late years has been much used for this purpose; but an eminent English veterinary surgeon has recently expressed a very decided opinion that its use impairs the digestive powers of the animal and predisposes to disease. The sour smell invariably found in a calf-house, where porridge or jelly of any kind is mixed with the milk, is proof sufficient that indigestion is the consequence. An egg put into each calf's allowance, and mixed with the milk by stirring with the hand, is a good help, and never does harm; but, with this exception, it is best to give the milk warm and unadulterated, however small the quantity, and, along with this, dry farinaceous food, turnips and hay, *ad libitum*. If more liquid is needed, a pail with water may be put within their reach, as this does not produce the bad effects of mixed milk. Indeed,

in this, it is the best to keep as closely as possible to the natural arrangement according to which the calf takes its suck—at first frequently, and then at longer intervals, as it becomes able to eat of the same food as its dam.

The diet of the cows at this season is a matter of some consequence. Swedish turnips yield the richest milk, but it is too scanty, and calves fed on it are liable to inflammatory attacks. Globe turnips should, therefore, form their principal food during the spring months. Care must also be taken that they do not get too low in condition in the autumn and winter, and for this end it is well to put them dry at least three months before calving. Some may think this long; but, on a breeding farm, milk is of little value this season. The cows, when dry, are kept at less expense, and, by this period of rest, their constitution is invigorated, greater justice done to the fetus, now rapidly advancing to maturity, and so much more milk obtained after calving, when it is really valuable.

When the calves are from four to six weeks old, they are removed from their separate cribs to a house where several can be accommodated together, and have room to frisk about. So soon as the feeding-yards are cleared of the fat cattle, the calves are put into the most sheltered one, where they have still more room, and are gradually prepared for being turned to grass; and, when this is done, they are still brought in at night for some time. At six weeks old, the mid-day allowance of milk is discontinued, and at about fourteen weeks they are weaned altogether. When this is done, their allowance of linseed-cake is increased; and, as they have been trained to its use, they readily eat enough to improve in condition at this crisis, instead of having their growth checked, and acquiring the large belly and unthrifty appearance which used to be considered an unavoidable consequence of weaning.* The cake is continued until they have so evidently taken with the grass as to be able to dispense with it. They are not allowed to lie out very late in autumn, but, as the nights begin to lengthen and get chilly, are brought in during the night, and receive a foddering of tares or clover foggage. When put on turnips, the daily allowance of cake, say 1 lb. each) is resumed, and continued steadily through the winter and spring, until they are again turned to grass.—This not merely promotes their growth and feeding, but (so far as the experience of five or six years can determine the point) seems a specific against black-leg, which was often so fatal as altogether to deter many farmers from breeding. It may be well to state here distinctly the particular purpose for which cake is given at the different stages of their growth. At first, the object is to accustom them to a wholesome and nutritious diet, which will supplement the milk obtained from any given number of cows, so as to admit of a greater number of calves being reared, and, at the same time, have greater justice done them than could otherwise be practicable. At weaning-time, again, it is given to help the young animal over the transition from milk to grass alone, without check to growth or loss of condition. During the following winter, however, the special object of its use is to prevent black-leg, as, but for this, turnips *ad libitum* would be sufficient.

When put to grass as year-olds, they deci-

dedly thrive better on sown grass of the first year than on old pasture, differing in this respect from cattle whose growth is matured. They are laid on turnips again as early in the autumn as these are ready; and it is a good practice to sow a few acres of globes to be ready for this express purpose. It does well to give the turnips upon the grass for ten or fourteen days before putting them finally into the feeding-yards; and then, if they can be kept dry and warm, and receive daily as many good turnips as they can possibly eat (globe till Christmas and Swedish afterward,) they will grow at a rate which will afford their owner daily pleasure in watching their progress, and reach a weight by the 1st of May which, if markets are favorable, will reward him well for all his pains.

The leading features of this system are, *uniform good keeping and progressive improvement*; in other words, to get them fat as soon after birth as possible, and keep them so till they reach maturity. The details given above are a description of the expedients generally adopted by the breeders of this district for securing these objects. [Jour. of High. & Ag. Soc. of Scot.

LIQUORICE.

TO JOHN S. SKINNER, Esq.

Editor of the Plough &c.

IN the March Number of the FARMERS' LIBRARY, you state that there is "room for inquiry and need for information about Liquorice." It belongs to the natural order *Leguminosæ* of Botanists, or that tribe of plants which have blossoms and pods like the common pea. Its botanical name is *Liquoritia officinalis*. It is a deep-rooting perennial, and has long been much cultivated in Spain; and, according to Loudon, since Elizabeth's time has been grown in different parts of England; hence there is little doubt but that it would succeed well in this country.—Loudon says:

"The soil should be a deep sandy loam, trenched by the spade or plow, or with the aid of both, to two and a half or three feet in depth, and manured if necessary. The plants are procured from old plantations, and consist of the side roots, which have eyes or buds. These may be taken off, either in autumn, when a crop of Liquorice is taken up for use, and laid in earth till spring, or taken from a growing plantation as wanted for planting. The planting season may be either October or February and March. In general the latter is preferred. The plants are dibbled in, in rows three feet apart, and from eighteen inches to two feet in a row, according to the richness of the soil. The after-culture consists in horse-hoeing and deep stirring, in weeding, and in cutting over and carrying away the haulm every autumn, after it is completely withered. As the plants do not rise more than a foot the first season, a crop of onions or beans is sometimes taken in the intervals. The plants must have three summers' growth, at the end of which the roots may be taken up by trenching over the ground. The roots are immediately sold to the brewers' druggists or to common druggists, or preserved, like carrots or potatoes, in sand till wanted for use. They are used in medicine and porter brewing."

Yours truly,

S. B. BUCKLEY.

Yates Co. N. Y.

* Corn meal would probably answer with us where the linseed-cake is not to be had. [Ed. Farm. Lib.

EXPERIMENTS WITH GUANO AND OTHER MANURES IN STOVER PARK, DEVON.

No. I.—Report of an experiment to test the comparative efficiency of five different kinds of artificial manure in improving pond mud, the experiment being made on an acre of inferior pasture land in Stover Park, in the years 1847, 1848, and 1849. The land on which the experiment was conducted is of uniform quality; the soil being a light sandy loam, a few inches in depth, incumbent on a stratum of white clay. The land underwent thorough draining in 1844, prior to which it would not produce a rent of more than 5s. an acre. No manures were applied to the land in 1848 or 1849. The object sought to be attained by extending the experiment over a period of three years, was to test the *durability* of the different manures.

No.	Manures applied in 1847.	Weight of Hay cut in 1847.	Weight of Hay cut in 1848.	Weight of Hay cut in 1849.	Weight cut per acre in 1847.	Weight cut per acre in 1848.	Weight cut per acre in 1849.	Cost of the Manures.
		lbs.	lbs.	lbs.	Seams of 3 cwt.	Seams of 3 cwt.	Seams of 3 cwt.	£ s. d.
1	Six cubic yards of mud mixed with 6 cwt. of SALT . . .	312	327	613	4 $\frac{3}{4}$	4 $\frac{3}{4}$	9	0 14 0
2	Six cubic yards of mud mixed with 1 $\frac{1}{2}$ hogshead of LIME . . .	353	337	538	5 $\frac{1}{4}$	5	8	0 13 6
3	Six cubic yards of mud mixed with 3 bushels of BONE-DUST	511	419	670	7 $\frac{1}{2}$	6 $\frac{1}{4}$	10	0 14 3
4	Three cubic yards of mud mixed with 3 cubic yards of TAN YARD REFUSE . . .	524	354	558	7 $\frac{3}{4}$	5 $\frac{1}{4}$	8 $\frac{1}{3}$	0 14 0
5	Six cubic yards of mud mixed with 90 lbs. of PERUVIAN GUANO	930	550	725	13 $\frac{3}{4}$	8	10 $\frac{3}{4}$	0 14 0

N.B. The after-grass in 1847 was stocked with sheep, but in 1848 it was left unconsumed.

No. II.—Report of an experiment made with the undermentioned manures on an acre of pasture land in Stover Park, in the year 1849. The manures, when mixed with a small quantity of fine earth, were applied broadcast on March 29th, and during the rainy weather, which prevailed at the time. The land is of a fair average quality, and was formerly used as tillage land, but has been in pasture for many years. The crops were mowed on the 22d of June, and the herbage produced by the different manures was of a superior quality.

No.	Manures applied.	Quantity of Manures applied.	Quantity applied per acre.	Weight of Hay cut.	Weight cut per acre	Cost of Manures.	Cost of the Manures per acre.
		cwt.	cwt.	lbs.	Seams of 3 cwt.	£ s. d.	£ s. d.
1	None	—	—	401	4 $\frac{3}{4}$	—	—
2	Superphosphate of lime . . .	2 $\frac{1}{4}$	9	616	7 $\frac{1}{2}$	0 18 0	3 12 0
3	Nitrate of soda	1	4	706	8 $\frac{1}{2}$	0 18 0	3 12 0
4	Peruvian Guano	1 $\frac{1}{2}$	6	1210	14 $\frac{1}{2}$	0 18 0	3 12 0

REALE ACCADEMIA D'AGRICOLTURA, OGGETTO.

Nomination à membre Correspondant, avec transmission du relatif Diplôme.



Corino, addi 16 7bre, 1849.

MONSIEUR: J'ai l'honneur de vous annoncer, que cette Académie, dans sa séance du 2 Juillet, passé, sur la proposition faite par son membre Mr. Le Professeur Baruffi, vous a nommé à son membre correspondant.

Ci joint, je vous transmets le Diplôme relatif à votre nomination; et, en vous priant de vouloir bien agréer mes sincères congratulations, j'ai l'honneur de me dire, avec la plus haute considération,

Votre très humble et obéissant serviteur,

PIERRE A. BORSARELLI, Secrétaire.

A Monsieur le Chevr. JOHN S. SKINNER,

Membre Correspondant de l'Académie Royale d'Agriculture de Turin.

REGIA ACADEMIA AGRARIA

TAVRINENSIS.

Quum Societati Agrariae Taurinensi sub auspiciis VICTORII AMEDEI Regis providentissimi feliciter institutae anno MDCCCLXXXVIII illud propositum fuerit, ut hujus Subalpinae regionis cultus ad populorum decus et incrementum magis magisque augetur, nihil profecto utilius, nihil convenientius visum fuit, quam si collatis Virorum genere, doctrina virtuteque praestantium studiis, ea omnia, ratione et experientia ducibus, exquirerentur, quibus aptior telluris excolendae modus, et uherrima omnigenorum fructuum copia comparari posset.

Verum temporis lapsu tot tantaque nobilissima ars, humani generis altrix, tulit incrementa, auxiliarium potissimum disciplinarum auctu, ut majoribus in die elucubrationibus incumbere debuerit Societas nostra, atque cum exteris Academiis et rei Agrariae cultoribus commercium magis magisque alere. Quapropter et majori Sodalium numero ditandam et Academiae titulo condecorandam Regiam Agrariam Societatem Taurinensem anno MDCCCXLIII decrevit munificentissimus Rex CAROLVS ALBERTVS.

Ergo Te, Equitem John S. Skinner, rei agrariae peritissimum ex cuius adiumento Academia nostra plurimum sibi ad optatum finem consequendum praesidii sperat, inter Academicos liberos latis in generali conventu suffragiis cooptatum adscriptumque pronuntiavit, uti litteris hisce proprio sigillo munitis declarat atque testatur.

Datum Taurini, ex aedibus Academiae, die II mensis Julii anno MDCCCXLIX.

MARONE, PRAESES.

P. A. BORSARELLI, A SECRETIS.



The preceding is a literal copy of the *Letter of appointment* and of the *Diploma*, transmitted through the department of the interior. The translation of them, may serve as an "exercise" for the sons of farmers who may be studying at school the tongues in which the first was written, and the second printed.

Can any one tell what is indicated by the article suspended on the limb of the tree above the goat, and which looks so much like a common old fashioned sifter? The diploma bears at its head the impression of what we suppose to be the royal coat of arms, and has attached to it a large official seal with appropriate emblematic devices. This we did not have engraved.

All we can say on this, as on many similar occasions is, that we expect to labour on through life, finding our chief pleasure in promoting the *cause of the plough*; and that our pleasure in doing that, is unspeakably enhanced, by the conviction, that instead of antagonism and discord, there is perfect harmony of interests between it and *all the other great industrial and useful pursuits of our country*, and all in harmony with the great and uniformly benevolent designs of the Creator—who never intended that we should leave unemployed and neglected, the vast elements of comfort, prosperity, and wealth, with which he has blessed our country.

Here we may add that one of our pressing wants is the *want of time* to cultivate, as we would like to do, useful intercourse with men and societies, at home and abroad, labouring in the same or in kindred causes—but if any one wishes to send this work to any particular person or society, engaged in the promotion of the industries to which we are devoted, we shall be glad to supply numbers as called for, without any consideration but the greatest of all, the hope of being useful to our fellow men—in our day and generation.

In one of his familiar letters, to his friend Dabney Carr, which make a good part of that charming work, "Kennedy's Memoirs of W. Wirt," Mr. W. says, "I persuade myself, however, that the pleasure which a man feels at the approbation of the great and good is laudable, and scarcely deserves so degrading a name as vanity." Whether the authority, than which there could be none higher in matters either of taste or morals, be apposite or not, the reader must decide; but, for ourself, we must say that, the editor of "The Plough, the Loom, and the Anvil," would be wanting in the feeling, which his own judgment tells him becomes the occasion, were he not to acknowledge and to register gratefully, in his own columns, the honour conferred on him in having been elected a corresponding member of "THE ROYAL AGRICULTURAL SOCIETY OF TURIN."

THE LEAD TRADE.

We are happy to have it in our power to report considerable improvements in this important branch of the trade of the country. The year opened with a large demand for pig-lead for shipment to the United States; and this demand has steadily increased during the year. This is altogether a novel feature, as the United States, instead of importing, had for many years exported considerable quantities of this metal. These large shipments, combined with a more active demand from continental ports, must have had a considerable influence on the stock in this country; and, for the information of those of our readers who are interested in this article, we subjoin a comparative account of the exports for 1848 and 1849. The actual shipments made in the month of September, 1848, amounted to 686 tons, of the value of £12,127; in the month of September, 1849, to 2687 tons, of the value of £44,469. The shipments for the eight months ending September, 1848, were 4222 tons, of the value of £78,908; for the eight months ending September, 1849, they were 10,824 tons, of the value of £182,109.—*London paper.*

IMPOVERISHED CONDITION OF LANDS IN VIRGINIA—CAUSE OF EXPLAINED.

Winchester, January.

It is the object of this paper to make manifest the fact, that the present impoverished condition of most of the cultivated lands in Virginia, as well as in other States, is to be attributed *solely to erroneous principles in the science of agriculture, and to no other cause whatever*. It is very remarkable, that although we are so perfectly familiar with the substance called earth, soil, or land, we should still remain so ignorant of its true natural composition. One of the very best agricultural writers, Von Thäer,* remarks, "It is not possible to give a satisfactory definition of the substance which chemists call earth." And it is very certain that the analytical labours of these talented men have discovered no one principle in its composition, which has proved of the least benefit to the practical agriculturist.

There is but little land in Virginia which has not sufficient depth for agricultural purposes, but there exists an infinite variety in its consistence all over the State, evidently for the wise purpose of better adapting it to the growth of different plants. For it has not escaped the observation of the practical farmer, that, in soils of equal fertility, the growth and perfection of the plant depend much upon the consistence of the soil. It appears to me that there is, in reality, no such thing as naturally poor land, because, from whatever depth the subsoil may be obtained, when brought to the surface and exposed a sufficient time to heat, light, air, and moisture, which are known to be essential to vegetable life, it will produce a good crop. This fact the farmer knows who, in an impoverished soil, continues to make good crops by ploughing deeper and deeper. To constitute earth, or soil, it is indispensable that there should be a mixture of clay and sand. Pure sand (silex) and pure clay (alumina) are minerals, not earths. Earth in its natural state, wherever obtained, and whatever be its consistence, is possessed of the fertilizing principle. What this principle is, is known only to Omniscience. Most agriculturists understand the natural fertility of the earth, to mean the fertility of the surface earth previous to cultivation, when first cleared of forest trees. The degree of this fertility differs very much in different locations, not only in different sections of country, but upon almost every field of the same farm; and evidently is not attributable to any difference in the consistence of the soil, or any peculiarity in its chemical composition, for it is well known to be caused by a peculiar substance, called mould, vegetable mould, and humus. Humus is of a dark chocolate colour when moist, when dry it is only to be distinguished from earth by its being pulverulent, and by that appearance well known by the term rich earth. It exists in considerable quantities in some locations, although it is not found in others adjacent; but wherever found it always imparts a much greater fertility than the earth naturally contains. It has been defined to be "the residue of animal and vegetable putrefaction." That it possesses the fertilizing qualities of barn-yard manure is manifest, for if collected and applied to exhausted land, it will impart a more permanent fertility than the best manure. But it is evident upon even a slight examination, that it is a very different substance. Besides, experience has taught the farmer, that leaves are the most indestructible of all vegetable substances, and require a much greater quantity of animal matters to cause them to undergo the putrefactive process, than they can possibly receive from the excrement of those animals which range the forests. It is not true that "it is the residue of the decay of vegetable matters mixed with earth," for it is admitted by Von Thäer, "In the open air and without the intervention of moisture, or of any additional heat, the process of fermentation or putrefaction is not perceptible; a species of decomposition does, however, take place, which is similar to slow combustion. This decomposition produces a very different matter to that which is the result of putrefaction, and one which is smaller in quantity, because the greater part of the carbon combines with the oxygen and escapes in the form of carbonic acid." This trifling residue is certainly not humus. It has been defined (by Liebig), "to be woody fibre in a state of decay." Every practical farmer knows this substance to be pernicious to vegetation of almost every kind. When completely decayed, however, it resembles closely in colour and consistence well rotted barn-yard manure; but differs from it in the important particular that it is utterly destitute of fertilizing qualities. I

* We should hesitate before we could decide, that he ought not to be called *the* best. His "Principles of Agriculture," English copy, consists of two vols. 1376 pages, for which we gave \$12 00. We have the American reprint word for word, and letter for letter, in one vol. 552 pages, beautifully stereotyped on fine paper, which we can sell for \$2 50. That and a year's subscription to the Plough, the Loom, and the Anvil, for \$5 00.

will not now recapitulate the facts which induced the belief, that humus is a chemical change in the earth itself, caused by shade, and that the quantity may always be estimated by its density and duration. In Virginia, and I presume it is universally the case, its formation depends very much upon the degree of exposure of the soil to the prevailing winds. In eastern Virginia, and in the valley, there is little or none of it found on the northwestern exposure, and it is precisely the reverse in western Virginia, the eastern exposures being almost invariably destitute of it. These prevalent winds, freighted with "carbonic acid and ammonia," never fail to lessen the fertility of the soil, unless its surface be thickly covered with loose stone. We learn from the official reports of the first governor of Virginia, that those lands in eastern Virginia, which are now so poor and unfruitful, were at that time considered more productive than the lands in Great Britain. And it is a fact well authenticated, that the first settlers in the valley preferred the State lands, which commanded a much better price per acre than the limestone lands in Jefferson county, now esteemed the best lands in the State. These slate, or as they are now called pine hill lands, were not only equally fertile at that time, but their consistence of soil better adapted them to the growth of tobacco, which was the great staple at that day. That pine does not require for its growth a soil of any particular consistence or peculiar chemical composition, as many persons imagine, is manifest, for all soils alike spontaneously vegetate pine, when exhausted by cultivation, and no soil will, when fertilized. There can be no doubt that trees differ, like plants, not only in the quantity of nutriment which they require, but in their ability to impart more fertility to the earth by shade than they consume during their growth. The poorest uncultivated lands in Virginia, and the only soil in the State to which the term naturally poor, in any sense, can properly be applied, are the stiff tenacious white oak lands. That this condition of this soil does not proceed from any natural defect in its consistence, or chemical composition, is manifest from the fact, that the black oak soils may be made to present the same appearance, by thinning the timber so as to permit the access of heat, light, and a free circulation of air. The trees which remain, not only consume the humus previously formed, but in time deprive it of a great portion of its natural fertility. These white soils may be fertilized, and made to assume every appearance of rich land, by merely covering its surface with any substance whatever which will cause a dense and permanent shade. The first settlers in Virginia owned the lands in large tracts, which, by the aid of slave labour, they were enabled to cultivate very extensively, and from which they derived princely revenues. No one entertained a doubt with regard to the economy of slave labour, until the soil became impoverished. In vain the educated and talented farmer sought in the most scientific works on agriculture for the knowledge necessary to prevent the exhaustion of his land; he everywhere met with the axiom "cultivated lands cannot be made to preserve their natural fertility without manure." This he the more readily believed, because the success of the farmer in the non-slaveholding States, as well as the more populous countries of Europe, *appeared* to confirm its truth. Acting under this false axiom, he bent all his energies to the collection and application of manure, with the result which might have been anticipated, its complete exhaustion. For you can readily believe, that the farmer who finds it utterly impossible to manure, annually, one-tenth of his cultivated land, must eventually exhaust it. If the plan which you, sir, have been advocating with so much zeal and ability were adopted, to wit, by wise and salutary legal enactments to place the Plough, the Loom, and the Anvil in juxtaposition, I do not entertain a doubt that in time, the renovation of the land would be effected. The consequent enhancement of its value would cause its division and subdivision into farms of such size, as to render it quite practicable for the farmer to manure every acre which he might cultivate. But, sir, you must not forget that when you accomplish this, you bid adieu to the gentleman farmer, a calamity to the south, which, in my opinion, would scarcely be compensated in the renovation of the soil.

Yours, respectfully,

R. T. BALDWIN.

Colonel Capron's Wire Fence—so much admired by passengers travelling between Baltimore and Washington, is represented in the last number of the London Farmer's Magazine, engravings and all, copied from the American Farmer—so that it seems, Jonathan can sometimes offer to old John something worthy of notice, even in the way of making iron fences. The next thing will be for us to send to him to manufacture them for us ready to be set up—just as we used to send home for hats and saddles, and as we now send for shirts and tea kettles.

PINE-APPLES AGAIN!

SOME very wise men laughed at the publication, in a late number, about *Pine-Apples!* Better tell us, said they, something new about *turnips and potatoes* and "sich like." Well, all we have seen now about them, lately, is Dr. Hayes' discovery of a means of preventing the *spread of the rot* amongst potatoes, after they have been gathered, by means of *fumigation with sulphur*: and, moreover, we *believe in it*, from the manner and the men by whom it is vouched for. Some too said, on seeing in our last number the article on the *rearing and breaking of sporting dogs*—"What have farmers to do with guns and pointers?" Now, for ourselves, we should rejoice to see every farmer's son trained to bring down the partridge and the canvass back, in their most rapid flight: and let those who object to it, object also to eat of them when laid before them. We perfectly agree with the Reverend Mr. Daniel, that "to excel in those innocent amusements which require our activity, is often one of the best preservatives of health, and no inconsiderable guard against immoral relaxation." But returning to our apples;—it is gratifying to see that not all of our readers have a disrelish for the beauties and luxuries of agriculture, and horticulture; and so it should ever be. The benefit is to society, when men's inquiries and tastes become more expanded and liberal, in proportion to the amplitude of their means. The Lord help us if all had to endure, and to enjoy, as too many of us have, little or nothing but the *monotony of constant labour!* Though as to what a man may have, merely to eat and to drink, that should be among the least considerations with any sensible man, in a country like ours, where every one has enough to eat and to leave—*cleanliness and good cooking*, are all that need be cared for. But who of us is not sometimes reminded of the adage, that "The Lord sends us meat, but the devil sends us cooks!"

By the same mail, happened, strange enough, to come both the following letters, from widely distant and different parts of the country—to wit: Carolina and Western Pennsylvania—they show not only that we *have* pineries in successful bearing, but, moreover, that in our immense country, one-half the people don't know, what the other half is doing! How few were aware of such preparations for, and such success in cultivating *pine-apples in the United States?* How sincerely would we rejoice to be, "at this present," within reach of our friend in the sunny South, and by and by, with him in the forks of the rivers that make the head springs of the vast Ohio! But, alas!—

CULTIVATION OF PINE-APPLES.

In reply to the queries in your last number respecting this fruit, I will state that for several years I have eaten pine-apples of my own raising, which are far superior to those imported. The reason for this superiority consists in the fact that those are shipped in a half ripe condition, while mine are cut when perfectly ripe.

The cultivation of this plant is attended with but little difficulty. On eating the fruit, I plant the crown in the ground, where it soon takes root. The plant must be protected by glass during the severest weather. In two or three years, it sends up its fruit much after the manner of the artichoke; after which, suckers from the same root continue to produce.

The largest I have raised as yet weighed *five pounds*, which is far more than those we receive from the West Indies. One of my neighbours has been equally successful with them, and is enlarging his plantation.

As to the tea plant, respecting which we have heard so much of late; it has bloomed here in the open air for the last ten years, along with other camellias, and is equally hardy. Thus far, this winter, we have had no frost to kill the tenderest plants.

J. S.

Dawfuskie Island, S. C., 19th January, 1850.

P— N—, Jan. 25th, 1850.

MY DEAR SIR: In the number for the present month of that most valuable and in-

teresting miscellany, "The Plough, the Loom, and the Anvil," you have, on the subject of "The Cultivation of Pine Apples," made the following inquiry—"Why is it not attempted in America?"

Knowing the great interest you take in whatever relates to the horticulture of the country, in addition to other interests of greater or less degree, I beg (not with a view of "appearing in print," *but the contrary*), en passant to say, I am one who has "attempted" it, and dare say you will learn of others, although I am aware of none.

My original stock were selected from pineries in England, where quite a passion for their cultivation exists, and embraces all their choicest varieties, and my plan of cultivation, without previous concert, is that recommended or adopted by "Mr. Fleming," who has been so successful.

I have under glass upwards of twelve hundred feet, to be exclusively appropriated to the pine-apple, the requisite heat being supplied by hot water pipes.

I wish with this impromptu communication, I could accompany a sample. I must reserve to myself that privilege, but would be infinitely more pleased, if you would intimate to me your willingness to appear in person to be a witness of the *modus operandi*, &c. &c. You would find it hereabouts, as in any, and every part of the United States, that you had many friends to greet you and welcome you amongst us, but, believe me, by none more sincerely and cordially than

Your friend and obedient servant,

W. C.

To J. S. SKINNER, Esq., &c.

A CURIOUS AND USEFUL INVESTIGATION.

WE take pleasure in announcing that P. A. Browne of Philadelphia, is writing, and expects shortly to present to the public, a work upon HAIR, WOOL, and FUR, which bids fairly to add to our stock of knowledge upon these hitherto much neglected subjects. To those who have not turned their attention to examinations with the microscope, it will doubtless be matter of surprise to find how intimately the labours of this gentleman are likely to contribute not only to the cause of science generally, but, through the improvement of our breeds of sheep and the manufacture of their fleeces, to the comforts of the citizen generally, and the wealth and prosperity of the nation. Mr. Browne, whose logical mind fits him for exact inquiries, and whose industry is proverbial, has spent months and years in these pursuits; he has provided himself with the best instruments, and by long use has acquired great skill in their application, and he spends many hours every day of his life in either adding to his already large cabinet of piles, or in their manipulation and description. Many persons who have visited him half disposed to smile at his assiduity upon a subject apparently so small as a hair, have retired enraptured with his essays, and convinced that he is doing much good to his country. Mr. Browne's book purports to embrace the whole subject, giving the cream of all that has hitherto been written upon hairs, with his own experience subjoined, confirming what is correct, and pointing out the errors of his predecessors. To these he has added the results of hundreds of experiments of his own, upon points that have never before been noticed in this or any other country. The volume will contain nine chapters, and will be enriched by several hundred diagrams.

The first chapter contains the true description of a pile, pointing out wherein it differs from a feather, and accurately discriminating between hair and wool, which have been hitherto confounded.

The second chapter enters into minute descriptions of the *different parts of a hair*, its stalk, root, vessels, secretions, &c., and shows the difference between a common hair and the whiskers of some of the lower animals. In a note to this chapter are some remarks upon the hairs of lunatics that are exceedingly interesting.

Chapter the third treats of the essential properties of hair, and shows in what part of the integument these properties reside. The ductility, elas-

ticity, and tenacity of pile are here explained, as are also the direction and inclination, and an attempt is made to fix the races of men by the covering of their heads. This chapter which contains much new matter will attract the attention of all those who delight in the study of Natural History. In a note will be found a review of those parts of Mr. Pritchard's Natural History of Man, in which it is contended that we all belong to one species, and that the covering of the negro's head is hair and not wool.

The fourth chapter relates to the *colour* of hair and its changes, whether sudden or gradual, &c.

The fifth chapter is confined to the *growth* of pile, but it gives numerous examples of variations in the shapes and dimensions of hair according to the place where it is found, and the uses it is to subserve. It also furnishes some curious facts in relation to *accidental* hairs.

The sixth chapter is devoted to the *dimensions* of pile,—its *exuberance*, *rapid growth*, *regeneration*, *decadence*, and *endurance*. It also points out some effects of disease, either of the animal upon which it grows, or of the hair itself, &c.

The seventh chapter treats of the electricity,—power to conduct caloric,—specific gravity and incineration of pile, and points out how it is affected by climate and seasons.

The eighth chapter treats of the *uses of hair, wool, and fur*. It is in this and the succeeding chapter, that Mr. Browne has put forth the whole force of his mind. The property of felting, fulling, and shrinking of wool is explained in this chapter in the most satisfactory manner.

The ninth and last chapter is devoted to the *raising and breeding of sheep*, and rules are laid down for effecting these desirable objects; some of which are *entirely new* and of the most *vital importance*. Mr. Browne there shows what he considers a radical error into which the sheep breeder has fallen, which, unless corrected, will forever prevent him from having a *permanent* breed of this useful animal.

Of the nature of Mr. BROWNE's researches, and the practical results to which some of his philosophical investigations lead him, an idea may be formed on a view of what follows. The reader may too, the better appreciate the advantages of a locality which enables us thus, to have recourse to such excellent sources of information, on subjects connected with the leading objects of this journal. For what he will find in this number about *gardening*, in reference to the season at hand, we are indebted to Mr. BUIST; well known as among the most experienced and scientific horticulturists in our country. After all, much occupied and anxious as we have been, to justify the liberal patronage we have received, equal in amount, already, to ten thousand subscriptions to some other agricultural journals, we yet feel that we have not more than begun to be prepared, to do all the service we hope to render, to the useful industries of the country.

We may venture to add for Mr. Browne, whose investigations of the breed of sheep, and the qualities of wool, have been perhaps more extensive than any one in our country, if not abroad; that he looks on Mr. Randall's work on sheep husbandry as *the best in its way he has ever met with*.

Philadelphia, February 6th, 1850.

DEAR SIR: My brief notice of Mr. Cockrill's wool was intended for your *private eye*, presuming that you are familiar with measurements of wool in general. I now proceed to compare it with some few other specimens in my cabinet, as the most effectual way of answering your inquiries for the general reader.

List of specimens employed in the comparison.

No. 1. Wool from the side of an ewe of Prince Lichnowsky's stock breed, at Kuchelna, which is considered the most celebrated flock in Europe; thorough blood for 40 years.

No. 2. From an ewe of the herd of Guettmannsdorf, celebrated for thorough blood and fine large sheep.

No. 3. From a buck of the herd of Pishkowitz, owned by Baron Zedlitz.

No. 4. From a buck of the herd of the Viceroy of Hungary at Altsuth.

The above are from a portion of the wool samples collected by Mr. Charles L. Fleischmann, for the U. S. Patent Office in 1845-46.

No. 5. Full blood Saxony from Saxony.

No. 6. " " " raised in the United States.

No. 7. $\frac{3}{4}$ " " " " "

No. 8. $\frac{1}{2}$ " " " " "

No. 9. $\frac{1}{4}$ " " " " "

These specimens were presented by Messrs. Bullock & Davis, of Philadelphia.

No. 10. Wool from Washington Co., Pennsylvania; presented by Messrs. Houston & Robinson, of Philadelphia.

No. 11. From the farm of Mr. Allen Roberts, of Bedford Co. Virginia; presented by Col. B. B. Long, of Philadelphia.

No. 12. From a ram lamb, nine months old, of the flock of the Duke of Leitchnau, in the possession of the Hon. R. R. Reed, of Washington Co. Pennsylvania.

No. 13. From the dam of No. 12 (being of one year's growth), in possession of Mr. J. Strian.

The two last presented by the Hon. R. R. Reed.

No. 14. From one of five bucks of S. Patterson, Esq., of Co.

No. 15. From one of five ewes of the same gentleman.

These last were sent to me from Washington City, probably by Mr. Reed, no letter accompanying them.

No. 16. From an ewe of Col. H. S. Randall, of Cortland Village, New York, presented by himself.

No. 17. From Mark R. Cockrill, Esq., of Tennessee (eight months growth).

No. 18. From a buck of Mr. John D. Patterson, of Westfield, Chautauque Co., New York, both of the two last presented to J. S. Skinner, Esq.

Comparison of length of staple, beginning with the shortest.

	Inches.	Tenths.		Inches.	Tenths.
No. 3.	1	1	No. 14.	1	5 to 1 and 7.10.
" 13.	1	1	" 11.	1	5 to 2
" 1.	1	2	" 6.	1	6
" 4.	1	3	" 12.	1	6
" 15.	1	3	" 8.	1	9
" 2.	1	4	" 17.	1	9
" 5.	1	5	" 7.	2	
" 10.	1	5	" 9.	2	9
" 16.	1	5	" 18.	3	

Comparison of fineness. Diameters taken with one W. Hirschman's (of Berlin) fine microscopes, with a power of 1200, and a micrometer adjusted which measures the 5000th part of an inch with great accuracy.

No. 5.	Diam.	$\frac{1}{833}$	of an inch.	No. 14.	Diam.	$\frac{1}{1250}$	of an inch.
" 8.	"	$\frac{1}{833}$	"	" 15.	"	$\frac{1}{1250}$	"
" 10.	"	$\frac{1}{833}$	"	" 17.	"	$\frac{1}{1250}$	"
" 6.	"	$\frac{1}{1041}$	"	" 18.	"	$\frac{1}{1250}$	"
" 7.	"	$\frac{1}{1041}$	"	" 1.	"	$\frac{1}{1562}$	"
" 12.	"	$\frac{1}{1093}$	"	" 2.	"	$\frac{1}{1580}$	"
" 9.	"	$\frac{1}{1250}$	"	" 3.	"	$\frac{1}{1600}$	"
" 11.	"	$\frac{1}{1250}$	"	" 4.	"	$\frac{1}{1600}$	"
" 13.	"	$\frac{1}{1250}$	"	" 16.*	"	$\frac{1}{1875}$	"

Comparison of strength. These were made with an instrument invented by me

* Mr. Youatt in his Essay upon Sheep, says, that it is coarse when the diameter is more than 1.500; fine when it exceeds 1.900, and very fine when it exceeds 1.1200. Mr. Youatt quotes Saxony wool at 1.840, and the Merino of Lord Weston (picklock) at 1.750th of an inch.

called a trichometer, with which the ductility, elasticity,* and tenacity of any fibre can be correctly ascertained.†

No. 5.	Broke with 54 grains.	No. 9.	Broke with 224 grains.
" 6.	" " 74 "	" 13.	" " 105 "
" 7.	" " 164 "	" 17.	" " 89 "
" 8.	" " 144 "		

Comparison by the *number of scales* upon the cortex. To those who have paid no attention to this subject, it may be as well to premise that it is upon these scales that wool depends, mainly, for its felting and fulling properties; and that these properties are increased in proportion to their number, their shape, their roughness, and the looseness with which they are set upon the shaft. Their number is ascertained by counting a given space under the microscope, and therefrom calculating the whole number on the area of an inch.

No. of scales counted upon one running inch.	Diameter of the shaft in parts of an inch.	Whole number of scales upon one inch.
No. 9.	2400	1250
" 1.	2490	1562
" 2.	"	1580
" 3.	"	1600
" 8.	"	833
" 4.	2496	1600
" 5.	"	833
" 6.	"	1041
" 7.	"	"
" 10.	"	833
" 11.	2498	1250
" 17.	2500	"
" 12.	2545	1093
" 13.	"	1250
" 16.	"	1875
" 18.	"	1250
" 14.	2552	"
" 15.	"	"

NOTE.—As this is a mere matter of calculation, and I am pressed for time, I have left it to be supplied by your readers.

Comparison by the *spiral curls* on a filament. Although it is upon the *scales* that wool mainly depends for its felting and fulling properties, yet the process is assisted by the spiral curls, wherefore, they also should be enumerated. But I have not time *at present* to make this calculation; moreover, specimens No. 1, 2, 3, and 4, were so much injured by handling, that it was not possible to enumerate these curls with certainty.

Some general remark upon the appearance under the microscope.

No. 1, 2, and 3. Some variations in the diameter of *different* filaments, the whole sample having the remains of yolk and dirt.

No. 4. More regular, but sample dirty.

No. 5. Thickened places upon a filament.

No. 6. Very even and clean, and filaments of equal diameter.

No. 7. Not so equal in thicknesses of the filaments.

No. 8. Same.

No. 9. Still more unequal.

No. 10. Very even and equal.

No. 11. Too *undulating*, but clean and equal.

No. 12. Clean and even.

No. 13. A little less even than No. 12.

No. 14. Clean and even.

No. 15. Same.

No. 16. Same.

No. 17. Not quite so even as the three last.

No. 18. Same as No. 17.

I will conclude with requesting those who will favour me with samples of wool to examine under the microscope, to observe the following directions, viz.:—Have the

* The elasticity of a woolly fibre is the measure of the *softness* of the fleece.

† I did not subject specimens No. 1, 2, 3, and 4, to this trial, because, when they came to my possession, they had been much handled and exposed, and I feared that their strength might have been injured.

fleece drawn out, not cut off—not to wash it,—to send me the name of the owner, with his address,—if the animal is imported, to state where from,—to state the age, sex, and length of time since last sheared,—the part whence the same is taken.*

I am, dear sir, your obedient servant,

P. A. BROWNE.

To J. S. SKINNER,

Editor of "The Plough, the Loom, and the Anvil."

N.B.—When you read the above, please recollect that you limited me in time, and that there has been very little clear weather fit for examination with the microscope.

P. A. B.

THE WOOL TRADE.

Receipts of Wool from the interior, on the New York and Pennsylvania Canals, and at Boston per Western Railroad for three years:—

	1847.	1848.	1849.
N. Y. Canals, lbs. . . .	17,044,000	8,729,407	12,731,402
Pa. " "	4,251,987	2,930,136	5,113,075
Western Railroad . . .	3,823,600	3,598,596	4,701,600
Total	20,119,587	15,264,136	22,606,078
Total imports	8,450,006	11,381,429	17,869,022
Total	28,609,592	26,645,566	40,475,100
Dom. expenditures . . .	378,440	781,102	159,925

This very considerable increase in supply has been attended by a constant increase in price, and the year closes, as compared with its commencement, as follows:—

January, 1849	34 a 36	41 a 34	28 a 30	25 a 27
" 1850	42 a 48	38 a 70	36 a 38	34 a 35
Increase	8 a 12	7 a 7	8 a 8	8 a 8

An increase of 50 per cent. in the quantities delivered at tide-water, has been attended with a rising of 25 a 30 per cent. in prices; the market closing with great activity, and advancing rates with very light stocks.

DR. THOMSON'S ADDRESS AT EASTON, MARYLAND.

EXTRACT FROM.

☞ We have had the pleasure to receive a copy of an "Address delivered before the Agricultural Societies of Talbot County, Maryland, on the occasion of their Annual Exhibition and Ploughing Match, November 2d, 1849. By James W. Thomson, M. D., of Wilmington, Del." Published at the request of the Society. This excellent performance is thus justly and well characterized by the Delaware Journal:—

"It commences with a very graceful and eloquent exordium regarding the charms of rural life and pleasures; then takes a bird's eye view of the progress of agriculture, from the Georgics of Virgil and the Odes of Horace to our own day; sketches, in a graphic and pleasing manner, the history of improvements in farming in Delaware, reviews the agricultural history of the United States in a very interesting and intelligent manner, and terminates with a beautiful peroration to *Woman*, Heaven's last best gift to man. It is a very handsome affair, and should be read by every farmer in the country."

It should certainly be put within the reach of all the farmers who favour this journal with their patronage, did we not find it impossible to publish at

* It would be best to send *picklocks*, always.

length, or even to make extracts from the very many we receive from all parts of the Union. We may take it for granted that it has been, or will be preserved, in that good old repository of such good things, "The AMERICAN FARMER," at Baltimore.

We must, however, at once make room for a single extract, in the sentiments of which our readers need not be advised of our humble and hearty concurrence, except that the doctor, with his "*indirect* protection at least" seems rather to shy the mark on which we would draw the bead at once. Those who go for the *power to maintain* the principles of free trade, must reach it by direct protection, up to the point when we shall be no longer "subject to the policy of British merchants." This is a preliminary clearing just as necessary as it is for the farmer to cut down, grub, ditch, drain, and clear his wild land before he can practice clean and profitable cultivation. We only wish we could make room for the whole address, as we should have done if possible for the admirable discourse pronounced by Senator Pearce, at Baltimore, the week before.

"To make agriculture profitable in the United States, as well as honourable—*protection*, at least indirect protection, is of vital consequence, and this we suppose can best be done by truly and faithfully encouraging those who use the products we raise,—at the highest market price,—we taking from them in turn manufactured goods; such as iron, shoes, hats, and other necessities, at the most reasonable rates at which they can be bought; and this price, the world over, is regulated by the amount of supply and demand, and the ability of consumers to pay for what they want in trade or its equivalent in money. This advantage to agriculture is amply manifested in the thrift of northern and eastern farmers; as with us and amongst all others, where the consumer and producer approximate and mutually sustain and support each other,—and in Maryland you are happily not without some proofs of the truth of this doctrine.

"Looking then upon manufactured goods as made up of so many parts of raw material, whether of wool, cotton, or iron, and so many of flour, beef, and pork, contributed by the farmer—it will readily be perceived why both should be protected from foreign interference, and how perceptibly the interest of the one runs into the other, and claims the consideration and favour of wise legislation and its fostering care. In corroboration of this view we need not be astonished at the declaration of an eminent member of the British Parliament, who recently said: 'Paradoxical as it may appear, I think Great Britain the largest grain exporting country in the world, although it is impossible to calculate accurately what quantity of grain and other farming productions is consumed in preparing fifty millions of exports by which she so greatly benefits. This grain and these farming products are placed in the laboratory of that wonderful machine, man, which gives him the physical power, aided by steam, of converting them into broad cloths, calico, hardware, &c., and in those shapes your wheat and farming find their way to every country in the world.'

"Precisely the same remarks apply to our own country, already recognized as the granary of the world,—with this additional advantage over Great Britain or any other manufacturing people, that we can raise within our own borders not only all the bread-stuffs we consume, without drawing upon the depots of the Baltic and Black Seas,—but have a large surplus left; and as our resources in the staple mineral, vegetable, and animal products, in which we abound, are developed, and given (as they should be), to our own looms and anvils, we too can and will become the greater manufacturer and our ships laden with our valued goods be wafted to all the markets of the habitable globe.

"What, then, fellow-farmers of Maryland, do you and all agricultural America, most stand in need of at this period of the nineteenth century? Is it the acquisition of more States or Territories? More land to cultivate, or larger and higher fed cattle than you now exhibit everywhere?

"No, no, these you already possess, and your children's children will have them in all time to come;—but what we most want amongst farmers is *education*, education of a high and liberal order, to cause us to *read* and *think*,—and love to do so,—to improve ourselves and to be able to instruct others: to avail ourselves of our privileges, yea, *our rights*, which are now withheld mainly through our own ignorance, indifference, and neglect."



DEFIANCE.

Bred by and the property of Henry S. Randall Esq., of Cortland Village, New York.

ON SHEEP HUSBANDRY, AND PARTICULARLY IN MARYLAND.

Not being aware of any resource more fruitful, or more within the reach of farmers south of Delaware, or one which is more universally neglected, than the rearing of sheep for mutton and wool, we shall continue to bring the subject to, we fear the reluctant notice of some of our readers, until we hope we may say of them, as they perhaps say of us now—the man's gone a "wool-gathering."

It is well known that a large proportion of farmers in the region referred to, look to their sheep as a mere incidental concern; convenient enough, say they, to yield yarn for the negroes' stockings, trap-balls for the children, and occasionally an almost superfluous luxury for the table; and the more so as American ladies rarely relish anything sheepish, and no good husband truly enjoys what his better half has little or no taste for. It is not to be denied that many are restrained, however, from increasing their flocks, from the almost certain *ravages of dogs*!—In October last, we made a visit to a gentleman near St. Michaels, Md., who, and his near neighbour, had then very recently lost by worthless dogs, lots of fine fat mutton, well fitted to make a "dish to set before a king," and more recently, extensive loss has been sustained in the adjoining county of Queen Anne's, in the same way. Yet we hear of nothing being yet done at Annapolis, in the way of arresting this vile opprobrium to the husbandry and the legislation of the State.

In Maryland there are 7,000,000 of acres of land, and 257,972 sheep; or about 27 acres to every sheep. In Vermont there are but little over 3 acres to a sheep; and yet in natural climate and pastures, the latter is not to be compared to the former. We lately saw in a steamboat coming from Talbot county, and from West River, in Maryland, large lots of as choice mutton, though perhaps not so *excessively* fat, as ever graced the shambles of

Leaden Hall Market. There is, in fact, something in the salt atmosphere pervading the tide-water counties of the Chesapeake Bay, peculiarly congenial to the health and constitution of sheep. We should doubt if there be in the world, a region in that respect, superior to the range of hilly lands lying all along from Herring Bay down to the mouth of the Patuxent, at least. Some of the sheep, Governor Stephens' for instance; to which we have referred, brought \$8 a head—but say \$6; ought not every farmer who has 4 or 500 acres of land, to pocket at least as many dollars for his sheep? leaving his wool to pay more than the cost of their keep!

We very well know (it takes no witch to find it out), that Maryland is tempted by climate, soil, and cheap transportation to go more largely into the *raising of grain crops*. But might not Maryland double her flocks, and yet not have one-fourth as many to the acre as Vermont, where they feed with choice hay, four and a half to five months in the year?

Mr. Randall, in his unequalled work on sheep husbandry, tells us that "the grazing lands of New York, cut up as they are into small farms (not averaging, in his judgment, more than 130 acres each), are worth from \$15 to \$30 an acre. Prime sheep lands will average about \$20," and yet on these lands, he says, "a gentleman who has been one of the most successful feeders of cattle and sheep in this State (P. N. Rust, Esq., of Syracuse), recently remarked to me, that he had *invariably found that sheep paid better for feeding than cattle*." We may here add, that in riding over his magnificent cattle grazing estate in Monroe county, Virginia, Mr. OLIVER BURNS, a gentleman whose information and judgment, fully equal his enlarged experience, expressed to us his own persuasion to the same effect; although we believe, he had not like Mr. Rust, actually made the experiment. But suppose Maryland to double her flocks, adding, say, 250,000 at \$2 each, there would be an almost or quite additional income of half a million a year, for investment in artificial manures, in labour, in internal improvements, in schools or in manufactories, the savings-banks in which millions worth of labour that is now wasted might be deposited, as it is in New England. Yes, the very clear saving which might thus be effected by the extension of her flocks alone, would be sufficient to erect woollen mills in every county of the State, for the manufacture of its own wool; while the people employed in them, and connected with them, would help to eat the farmer's milk, and mutton, and corn, and cabbage. Mr. Randall estimates the profits of wool growing in New York, on lands worth \$20 an acre, at 20 per cent. over and above all expenses; and yet he sets down these at $27\frac{2}{3}$ cents per pound, of wool, where the fleeces do not exceed 3 pounds. There are, he says, two or three other considerations highly favourable for the raising of sheep. But our remarks are running to a length that compels us to content ourselves for the present with a short extract, invoking the attention of those who are deterred by the fear of dogs (if we must continue to submit forever to that reproach on the character of the State) to his remark, that die when or how it may, the grown sheep "*never dies insolvent*!"

"The risk, by death, by ordinary causes, is nothing. Two per cent. is allowed in the preceding estimates, as the full product of wool and increase is carried out. But, in reality, the sheep never dies 'insolvent.' If the colt or the bullock dies on our hands, after two or three years of trouble and expense with it, the loss is nearly a total one. If the fine-wooled sheep dies at any age, the wool then on it, or what it has already produced, *more than covers all the cost which it has ever made us.*"

"Not only is the winter manure of the sheep superior to that of any other domestic animal, the hog and fowl excepted, but it practically becomes still more so in proportion, in summer, when scattered over the pastures, by reason of the conditions in which

* I speak, of course, of the cost of rearing and feeding.

it is deposited. The soft porous excrements of the cow* or horse, exposed to the exsiccating action of sun and wind, evolve most of their fertilizing properties into the atmosphere, and this effect would increase, in proportion to the warmth of the climate. The excrements of the sheep, on the other hand, are deposited in small, hard, rounded pellets, which fall down between the leaves of the grass, and are thus in a great measure protected from the sun and wind, until they are trodden into and incorporated with the soil.† Then, again, they need no spreading,‡ like the dung of the horse and cow. And finally, instinct, in leading the sheep almost invariably to seek the summits of the elevations, in warm weather, for its night quarters, leads it to deposit much more manure in proportion, where it is most needed, on the drier and more barren hill-tops; and where, being more remote from water-courses, less of its juices are liable to be washed away by rains, into the streams, or on to the lands of others.

"Sheep are also far more efficient than any other animal (if we except the worthless goat) in clearing up new lands, or neglected old ones, of those briars and shrubs which it is often difficult to eradicate without ploughing; and they often abound on lands which cannot be ploughed with profit. And, when ploughed, the shrubs in the fence corners must be left (to the utter shame of all good husbandry), or the fence must be removed—sometimes at a great inconvenience. The sheep delights to browse on the buds, and to strip the bark of most shrubs,§ and they thus soon destroy them. It would be good economy for the farmer to keep his neighbours' sheep, without charge, on all very briery or coppiced unarable lands, if he could not so stock them himself.||

"Finally, it is generally believed by experienced flock-masters—and observation has led me to fully coincide in the opinion—that sheep not only improve the lands they depasture more than any other animal, but that they exert an almost specific influence in improving the character of the vegetation. All wild, poor grasses gradually disappear from their pastures, and are succeeded by the best ones; and the sward becomes remarkably dense and even. This is probably due to the richness and better distribution of their dung and urine.

"If upward of twenty per cent. profits, over and above all expenditures, have been and still can be made, on lands worth \$20 per acre by wool-growing—on lands, too, where the reign of an iron winter confines sheep to dry feed at least five months of the year—how are we to estimate those profits on lands costing but a small part of this sum, which, though inferior to the former, will, by reason of the shortness and mildness of the winter, support about an equal number of sheep per acre, and also save the expenses of preparing dry feed, of foddering, and a large proportion of that laid out in barns, shelters, &c.?

"It will be seen that, by assuming the data of the last of the two preceding estimates (with the exception of the loss by death), the gross cost of producing 300 lbs. of wool, on the grazing lands of New York, is \$82 16, or 27 $\frac{2}{3}$ cts. per pound. This is undoubtedly as low as it can be produced where the fleeces do not exceed the average weight of 3 lbs. Let us now proceed to inquire what would be the gross expense per pound in the Southern States."

Here Mr. Randall goes into a very elaborate and able investigation of that point for which we have not room.

If we do not here, we will soon give for general information, the nature of the legal provisions in some other States against sheep-killing dogs—in the way of prevention or remuneration.

* Gazzeri found that 100 parts of recent cow-dung contain 25 per cent. of dry, solid matter, and that 5 per cent. of this is lost in 40 days by exposure to the air. I do not think *this* indicates the full loss which would be sustained in a southern latitude.

† These rounded pellets are covered, too, in the animal in good condition, with a coating of mucus, which farther protects them from evaporation.

‡ Their urine, also, is voided in quantities which render it highly beneficial; while that of the horse and cow is voided in such large quantities in one place that it is not only in a great measure wasted, but in a dry time (so that it is not diluted by the moisture in the soil), its rich salts, so far from benefiting, actually kill the verdure.

§ This is particularly true of the blackberry or bramble (*Rubus villosus*), and the raspberry (*Rubus idocus*), often great pests on new or neglected lands at the North. Sheep can even be made to attack the elder (*Sambucus canadensis* var. *pubescens*), and various other troublesome intruders, by turning them upon them in thawing "spells," in the winter, after they have been for some time confined to dry feed.

|| The sheep eats a greater variety of plants than any other animal except the goat—it being supposed that the former eats 400 varieties of vegetables, while the goat will eat 500.—*Edit. P. L. & A.*

THE OHIO CULTIVATOR.

THE TRUE POLICY FOR OHIO FARMERS.

The CULTIVATOR says:—

 Our editorial brethren in Ohio and adjoining States will oblige us by noticing in their papers the commencement of our new volume—stating terms, &c.

TERMS

ONE DOLLAR PER YEAR, for single subscriptions, or any number less than four. Four copies ordered at one time (they need not be to one address), for THREE DOLLARS, nine copies for SIX DOLLARS; and, at the same rate (three copies for \$2), for any additional numbers—payment always in ADVANCE, and all subscriptions to commence with the first number of a volume.

Though neither “in,” nor “adjoining” Ohio, our good will is none the less for the Cultivator and its intelligent, active, and animated editor, a favourite wherever he goes, and especially with the better half of creation, if we may judge by his being well placed at all the cattle shows, in positions that bring him into the midst of the fairest flowers of the vicinage. In addition to the constant desire to render a kind turn, not only to him, but to every brother editor, we have many good friends in Ohio, reaching up to Governor TRIMBLE, the well-known friend of Agriculture, Governor VANCE, the good friend of all that is good in the physical and moral world, Comptroller WHITTLESEY, who knows how to control oxen, as well as the expenditure of the public treasure, Senator CORWIN, and many other distinguished sons, native or adopted, of the Buck-eye State.

Grateful for such marks of confidence and good will in such quarters, how could we be indifferent to the success of a journal which, on terms as “cheap as dirt,” is doing so much to arrest the deterioration of the rich soils of Ohio, already much exhausted, by that improvident course of cultivation which has everywhere marked the progress of western settlement, and which *must continue* to mark it, as long as the policy of our government shall tend to break down all *other* branches of industry, in which men would concentrate, and be prosperous customers to the farmer; driving them all to yet more and more distant lands in the West, there to be the *rivals* of the farmer! Against this irresistible tendency, and these inevitable results, it is in vain to talk, while the same policy shall lead, as it must, to the same consequences. In vain will be the repetition of premiums for fat hogs, and fat acres. We must look for the worm that is *gnawing at the root of the tree*. Until that is dug out and killed, it will be idle to wash the branches. All the whale oil soap in Christendom, will not make the Ethiop change the colour of his skin, or wash out the leopard’s spots.

By the by, “we hope we don’t intrude,” as Paul Pry says, when we call attention to, and congratulate friend Bateham, on the *new features* that are breaking out on the face of his journal—the *cotton factory*, the *railroad car*, and the *canal boat*, are there, where they ought to be, in juxtaposition with the plough and the pitchfork. We look on these new marks as so many signs of a wholesome eruption. It shows that the truth is coming out. “*The truth is great, and it must prevail.*” In these signs, friend Bateham, Ohio agriculture must conquer all its difficulties, and make general advancement, if destined to conquer at all. There “are no two ways about it.” The question is between “*free trade,*” and—*protection of American labour*. Were a ship to be added to the symbols on the Cultivator’s escutcheon, emblematic of the dependence of commerce on the plough, and the loom, it would be but in perfect accordance with that perfect “harmony of interests,” which subsists between all those great branches of industry, when properly understood.

If the farmers of Ohio want to create a reliable market for their corn and their "twenty millions of bushels of wheat in a favourable season," (which the CULTIVATOR tells us they can produce,) for their beef and their pork; they must learn to repudiate and stigmatize, as suicidal and too "subservient," as General Jackson said, "to the policy of British merchants," that system of legislation, under which the Baltimore and *Ohio* railroad have been recently forced to go to England, to import, by one single order, near half a million dollars worth of *foreign agricultural produce, in the shape of rail road iron*, to be laid down in the very regions of this Union, in which, perhaps above all others, a bountiful Providence has scattered the materials for making iron, and where it would be made, *if, aye if*, agricultural and other American labourers could be forced, like English labourers, to work for \$1.50 per week, *and out of that, find themselves and their families!!* \$75 a year!! Let the farmers of Ohio look at the policy which, under the seductive and fraudulent name of "free trade," brings into competition with the labour of her freemen, the half-starved half-paid labour of European serfs *habitually called "servants,"* and when they have done that, and determined to *reform it*, they will have done more to secure prosperous agriculture for Ohio, than by all the cattle shows they can hold from now till doomsday—highly useful and commendable as these are. Men who can make so much more than they can sell, don't need to be told how to make still more, how to fatten a hog, or how to enrich an acre of land. They want to be told, *where and how near*, they shall find *prosperous consumers*, employed in other pursuits, in spinning and weaving her own wool, and in mining and smelting her own coal and iron, able and ready to *buy her beef and her pork, her corn and her wheat!* This is what Ohio farmers need, and what they ought to be told, by all who undertake to enlighten her sons in the true sources of her prosperity. Let Ohio, with her vast elements of wealth, population, and power, insist on a policy on the part of the general government, that shall tend to diversify labour, and to concentrate her sons within her own bosom, and common instinct will work out the rest. With wealth and population *will come education*, with education *will come* virtue and knowledge, and all the blessings that accompany and adorn the highest state of civilization. These are the lessons that the farmers of Ohio need to be taught, as the *great primary indispensable elements of practical agricultural improvement!* Where home industry is not protected, the tendency will be centrifugal,—it will be to go abroad into other regions, and wherever the tendency is to *disperse*, in that case there will *never be permanent general agricultural melioration*. You might as well expect the waters of the Ohio to leap up, instead of down the falls at Louisville.

Let those who think with us *say so*. Let those who think otherwise *say so*. It is the question of questions—not for politicians and demagogues, and slang whangers, seeking to get or to retain office, but for *practical farmers*.

"Free trade" is wrong, or it is right. There is no half way ground; and the great industrial interests of this country can never be settled or prosperous, *until that question is settled*, and settled in favour of placing, as Mr. Jefferson advised in 1816, "*the manufacturer by the side of the agriculturist.*" Let him who doubts read to the end the letters now appearing in this journal from H. C. Carey, and if not convinced, he would not believe, though a witness were to come from the dead.

LEGISLATIVE AGRICULTURAL CLUBS.

WE know not how others may think of it, but for ourselves, it would not be easy to express, in all its fulness, the satisfaction we derive from seeing these weekly agricultural meetings in full and earnest operation at the seats of some of the State govern-

ments, composed of men whose official and highest duty it is, to study how they can best promote the prosperity of agriculture. What sign can be more propitious and indicative of a wholesome public spirit in regard to that great interest of our country?

We can't make room for everything, or we would strain a point to publish the remarks of Col. WILDER, the President of the Senate of Massachusetts, at one of these meetings lately, where the subject was *Agricultural Education*.

He suggested, says the report before us, three plans which might be worthy of consideration. 1st. The establishment of a central school with an experimental farm. 2d. The establishment of such schools in every agricultural county in the State—or the engrafting of these upon institutions now existing; and 3d. The introduction of the elements of agricultural and horticultural science into our public schools.

At the same meeting, Mr. TESCHEMACHER, one of the most skilful practical chemists in any country, announced the discovery by A. A. HAYES, M. D., State Assayer, of a means of effectually arresting the progress of the *rot in potatoes* after they have been gathered, by *sulphureous fumigation*. Pressed now for room, we have to postpone Dr. Hayes' own description of the discovery and process. We can only promise our readers to preserve it, and to give it in time for application to any future crop. We do not doubt the efficacy of the application in the way recommended.

Would that all the legislatures in the Union would follow the example of forming agricultural clubs during the session. No re-union of the friends of Agriculture could be better devised to spread over a whole State the knowledge of whatever is new and useful in the products and processes of any part of it. Why not form such clubs at Harrisburg, Annapolis, Richmond, Montgomery, Ala., Baton Rouge, Trenton, Dover, &c. &c., while the legislatures are now in session?

ON THE FISHERIES OF NORTH CAROLINA.

BY LEMUEL SAWYER, ESQ.

THE following paper from a citizen of North Carolina, discloses to us a new and highly interesting view of a considerable source of wealth and industry, in that ancient and always patriotic commonwealth.

Let those who may be at a loss to know how such subjects can be brought within the purview of an agricultural paper, be once for all advised that we have spread a wide net, and that "*all is fish*" that comes within it, appertaining to the development and fruition of our internal resources of comfort and profitable application of labour, whatever it may be. And besides, we should like to know what any *farmer*, residing within striking distance of the Potomac fisheries, would think of the question, should any body ask it?—*how do these fisheries concern you?* Even as one means of diversifying labour and opening another source of subsistence, the possession of fisheries in any neighbourhood is to be accounted one of notable value, wherever to be found.

We hope to obtain for publication from the same well-informed and highly competent authority, a sketch of the peculiar capabilities of the same State, for the *manufacture of wine*, and also of the uses and value to her of the *long-leaved pine*. How usefully might such a pen, guided by a mind so inquisitive and so well informed, be employed in a *Bureau of statistics*—an office which, as we have repeatedly said, every State in the Union, with a due perception of its interests, should hasten to establish.

Who can fail to agree with the writer as to the expediency of adequate provision and facilities for collecting, and arranging systematically, all the statistics that would go to illustrate the rise and condition of an important branch of industry and wealth like this; to the end, that the statesman or legislator might at once put his finger on the requisite information, that would enable him to understand, to protect, and to extend it. And so of all other branches of our internal resources. Yet let any man say to Congress: "We want you to provide for, and to appoint an officer, with the necessary assistance, to gather and systematize all the facts connected with the fishing industry and pursuits of the United States; the quantity taken of each kind, and

where; the capital and force employed; the interests involved, and its bearing on our naval and other resources; and its susceptibility of being extended, or impaired, by wise or improvident legislation." Make such a proposition to your law-makers, and, ten to one, the only answer would be—"What an odd fish that fellow is!" The same should be done as to our facilities and capacity to make wine and silk, and duties laid on both that in a few years would bring thousands of men and of capital, with the requisite knowledge and machinery, to make in the Carolinas, and Georgia, and Alabama, all the wine and silk we now have occasion to import, at the cost of so many millions—and these Italians and Frenchmen would be so many customers to the planter and farmer. All however is coming round—"Rome was not built in a day!"

For the present, however, all these matters are too plain and vulgar to engage the attention of Congress; but for a *military* department, or exploration, or inquiry of any sort, no expense is too great; especially if the promise be to kill the greatest number of men, at the greatest possible distance, and at the least possible expense of time and gunpowder. So we go. Ah! we are a wonderful people.

This letter was addressed to the Census Board, in reply to one of their circulars, but not coming within their forms of publication, we have been kindly permitted, by the writer, to present it to the readers of "The Plough, the Loom, and the Anvil."

Washington, May 18th, 1849.

GENTLEMEN: The product of the seas, or the fisheries of the United States, deserves, by its importance and increasing value, a separate desk to be devoted to that subject. The fisheries contribute largely to swell the amount of our exports, besides affording an important article of exchange and barter in the internal trade of the country. I propose to take up the consideration of this fertile subject of inquiry, and make it the principal theme of my first communication to the honourable board. It must be limited, even then, to the comparatively narrow circle of my native State, where alone I have had personal knowledge and experience enough to enable me to speak authoritatively.

In examining the column under the head of "fisheries," in the compendium of the last or 6th census, which rendered an account of the number of barrels of salted fish put up for the market, I find the returns but barren and far below the actual amount. I am well acquainted with the various fisheries of the rivers emptying into the Albemarle Sound, and on the shores of that large body of water, in which I think more shad and herring are caught than in any other district of the same extent in the United States.

In the county of Chowan, where the principal fisheries are established, the return is put down only at 18,000 barrels. There must be a deplorable falling off in the yield, if the amount for the present season does not double that, embracing the various landings from the mouth of the Chowan River 8 miles or so, below the town of Edenton, to the termination of navigation above the town of Winton. If the quantity caught on the Bertie and Hereford shores of the river be included, the imperfection of the return is still more glaring. I would advise that the fish caught in this river, as well as elsewhere, should be classed under their two distinct heads of shad and herring. They are now confounded, and we can never know, under the present order, what number of barrels contain shad and what of herring. It is very desirable to obtain certain information of the amount of each kind thus put up, that we may estimate their comparative quantities and value, in order to know to which we should give credit for the largest source of our export trade. A considerable quantity of herring was formerly, and I believe is still, shipped to the West Indies, particularly to St. Domingo; as an article of food, they enter largely into the consumption of the black population abroad as well as at home. A large amount is also shipped coastwise and by internal navigation to the ports of Baltimore, Philadelphia, New York, Providence, and Boston—thus contributing essentially to swell our domestic or home trade, and to give active employment to our licensed tonnage.

Below the mouth of Chowan River, the Sound is broad, being in breadth from the shore of Chowan, to that of Tyrrel or Washington, about 14 miles. The seines used there are generally a mile in length, as they have to be laid out a considerable distance from the shore, it being quite shoal water within the distance of half a mile. A large gang of hands is required to work them, generally 30 or 40 hands, besides the scores of women, principally negroes, to clean the fish. The rule is, not to let a fish be over two hours out

of water before it is in pickle. I have known 200,000 herrings hauled on shore at one draw; the power applied in addition to the hands, is a capstan turned by two or more horses to wind up the warps, bring home the seine, and land the fish. Six thousand shad have been caught at one drag this season, and larger quantities are caught there than at any equal number of fisheries on the Potomac.

There is some deception, for want of discrimination in reporting the different kinds of fish in the return from Beaufort. It is estimated at 4000 barrels, and one might infer they were the usual kinds, shad and herring. But those fish constitute a *small portion of the amount*. They are mostly of a sort of fish peculiar to that inlet and the waters of Pamlico and Core Sounds. They are the *large mullet*, and a *blue fish*, similar in size and appearance to the No. 1 mackerel, and are of a *most delicious flavour fresh or pickled*. I should estimate the amount caught about Ocracoke and Beaufort and the intermediate shores at 10,000 barrels. A considerable trade is carried on in the barrelled mullet by small vessels to the ports and landings up the fresh water rivers emptying into those Sounds and the Albemarle; as the Chowan, the Roanoke, the Perquimans, the Pasquotank, and thousands of barrels are thus distributed, many being transported along the Dismal Swamp canal and through to Norfolk. Some have been shipped to New York from Wilmington, but the people not being accustomed to them, would not purchase, though at a much lower rate than mackerel, and so the experiment failed. It is usual in eliciting information on this and similar subjects, to propound several interrogatories through the marshal of the district, or other agent, to the principal proprietaries of the fisheries on the region whence the information is to be derived. In fulfilling that plan I would propound the following or similar inquiries:—

- 1st. What is the average amount of shad caught at your fishery in a season?
- 2d. The same in regard to herring?
- 3d. What is the greatest number of either you have caught at a single draw?
- 4th. At what time in the Spring do you commence fishing—and which kind make their appearance first?
- 5th. How many barrels of shad have you put up at the present, and at the last season, and what is the requisite number required to fill a barrel: what the selling price per barrel?
- 6th. What amount of herring did you catch this and the last season, what amount sold fresh, and how many barrels have you put up, of whole and of gilled or cut, and what the average price of each?
- 7th. What amount, as far as you can estimate, from data within your knowledge, have been caught in the Albemarle Sound during this Spring, 1849, first of shad, next of herring?
- 8th. What is the cause of the gradual diminution in the annual run of shad and herring, and at what per centage do you estimate this annual falling off?
- 9th. What remedy would you recommend to check this growing evil?

I beg leave to refer to Col. R. T. Paine, of the Mexican commission, for further information, and to Joseph B. Skinner, Esq., of Edenton, who has been largely and successfully engaged in former years in carrying on the fishing business in this locality. To whom I might add the Postmaster and the Collector of the port of Edenton, as likely persons to give satisfactory answers to these inquiries. The town of Plymouth, on the Roanoke, is of course, the centre of trade in these commodities procured in those waters, and the Collector could afford the required information. The Hon. David Outlaw, who lives at Windsor in Bertie, could inform you as to the amount of fish taken in the Cashie, one of the estuaries of the Chowan, as well as the quantity caught between the mouth of the river and the town of Winton in Hereford county. A large amount of herring are taken in the Scuppernong in Washington, at the head waters of which is a *pond or cul-de-sac*, in which such shoals of herring are confined, that they are dipped up in common hand nets, and vessels of considerable size loaded in the course of two or three nights. Mr. Donnell represents that county, as a part of his district, and no doubt would afford you all the information sought for, in regard to that *most remarkable natural fish trap*. The inquiries might be extended to the fisheries on the Perquimans river and especially to the Yeeopim, where the first shad of the season, as early as the 20th of February, are caught in gill nets, transported in carts to Elizabeth City, and through the Dismal Swamp road to Norfolk; from thence they are sent by the steamers to Baltimore and to our market, weeks in advance of those of our waters. The Pasquotank River and the Newbejau Creek have extensive fisheries on their shores, of which the Collector of the port of Elizabeth, District of Camden, could give you some account.

A vast amount of shad are caught from the middle of February at the Roanoke marshes the foot of Albemarle Sound, mostly in gill nets. A considerable traffic is carried on in them by sloops and schooners from New York and the North, whose return cargoes are put up in ice, are delivered fresh and yield a large profit. The trade, however, is so prejudicial to the fisheries above, that the Legislature of North Carolina, by severe penal

enactments lately passed, have broken it up by prohibiting the use of nets within the narrow channels that intersect the marshes of Roanoke Island, so as to allow the shad a free entrance into Albemarle Sound. The search for information need not extend further south than the Savannah River, as few or no shad and herring are known to strike our coast to the south of the Cape of Florida. We thence proceed northerly to the shores of the Chesapeake, Lynhaven Bay, and the James River and its tributaries; thence to the Rappahannock, and beyond these to the Potomac, which is the great fishing ground. The celebrated landing of the White House, below Mount Vernon, yields the greatest amount of both kinds, and it would be desirable to have the benefit of the proprietor's knowledge as to the annual amount taken there. At Crany Island is also a very important fishing station, and here it is stated the greatest destruction is dealt to the spawn and young of the fish, by the abuse of the advantage which the location affords in running the seines across the channels quite over to the Maryland shore, and trespassing upon the grounds of its fishermen. This was done in the night time, to avoid detection, and it excited such angry feeling on the part of the proprietors who were thus injured, that the long seine was severed, and made into two. Of this wholesale destruction of the spawn and young of the two species of these most useful of the finny tribe, great complaint is made by the fishermen of the upper landings, who are thus unfairly cut off from their annual supply, and who complain of a sensible falling off in the run of the fish, which threatens in a few years more a total failure. It would be advisable for them, and all the adjoining inhabitants to petition the Legislature of Virginia for a redress of this grievance, by setting apart one day in the week, Sundays especially, for the cessation of operations, by limiting the length of the seine and such other provisions as prudence and wise counsels dictate. The field of inquiry on this subject extends with undiminished interest, from the Delaware River to Passamaquoddy Bay, including the North or Hudson River, where vast numbers of shad are caught in gill nets, in the very harbour of New York and across the river, near its mouth to the shore of Jersey City. They are large and of superior quality, and as far as my taste may be appealed to in deciding as to the flavour of these and all other kinds of fish, I should give it in favour of those caught in salt water. They contain a certain quantity of oil, when fresh from the sea, which appears to be parted with, or perceptibly reduced, in their progress through a long course of fresh water. In fact, I think they become poorer the further they ascend from their native element.

In regard to the mackerel and cod fisheries of the Atlantic coast, I would suppose that they were a distinct branch, and deserve by their importance a separate clerk to do justice to this fruitful subject of investigation. While the shad and herring fisheries are confined to the shores, principally of our fresh waters, and seines are the instruments used for their capture, the mackerel and the cod are inhabitants of the sea, and are taken at sea by hooks and lines, in vessels fitted for the especial purpose, and which are properly encouraged in their occupation by liberal bounties. Their use enters largely into our home consumption, and they constitute no inconsiderable sum in our exports. I think the whale and seal fishery should likewise be separately considered, and detached from that of the mackerel and cod fishery. The centre of trade, and of course of information in regard to the two former subjects, is Boston, and of the last, or whale fishery, Nantucket, New Bedford and Sag Harbour, to which points the inquiries should be directed. It is believed that a full account of our internal and external fisheries, when collected from their various sources of information and properly compiled and arranged under their several heads, would compose a volume of statistical knowledge, highly useful in estimating the relative sources and value of the different branches of our domestic enterprise and industry, and in showing the importance, in the aggregate, of this great source of our domestic and foreign trade, as well as proving to what degree of utility it has arrived as a nursery to our hardy, enterprising, daring, and skilful seamen.

There are two other heads of inquiry and information contained in the schedule of the compendium of the 6th or last census, the subjects of which, so far as they relate to my native State, North Carolina, I profess to be personally conversant. That is, the vintage, and the products of the long-leaved pine, or *pinus terebinthina*. Should you honor me so far as to deem any contribution of mine, on these subjects, worthy of your acceptance, it shall be my pleasing task to make my next communication in the course of two or three days, the medium of such information as I may possess.

I conclude this chapter on the fisheries, partial and imperfect as it is, confiding to other and abler hands, the task of completing the history of the ichthiologial branch of our national resources and prosperity.

I am, gentlemen, with the greatest respect and consideration, individually and officially,
Your obedient humble servant,

LEMUEL SAWYER.

COTTON MILLS IN NEW ENGLAND.

THE following statement is taken from an article by A. A. LAWRENCE, Esq., published in Hunt's Merchants' Magazine for December. Mr. Lawrence, it would be superfluous if not officious for us to say, is a gentleman of the highest respectability, residing where there exists the largest amount of experience in the manufacture of cotton; a subject of which we profess to have no, or very little, personal knowledge.

"The profits of manufacturing are so often over-rated, that it is with difficulty that the truth can be believed. The well-managed New England mills have been as successful, during the last ten years, as any in the world—certainly more successful than in any other section of the United States; though for many years after their first establishment, they brought great losses upon the stockholders. The following table will show the results of the business of the best establishments :—

DIVIDENDS OF THE NEW ENGLAND COTTON MILLS OF THE FIRST CLASS.

Name and location.	Capital.	1839.	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.
Appleton, Lowell	600,000	5	5	6	0	6	6	12	12	3	5	3 a 6
Atlantic, Lawrence	1,300,000	x	x	x	x	x	x	x	x	x	x	0
Boott, Lowell	1,200,000	11	4	11	3	5	10	18	16	8	5	2
Boston,† Waltham	450,000	6	3	6	0	3	8	5	10	6	4	4
Cocheco,‡ Dover, N. H.	1,300,000	6	0	6	0	0	3	6	6	6	6	6
Cabot, Springfield	690,000	6	3	9	5	11	20	20	16	4	3	6
Chicopee, Springfield	340,000	9	0	3	0	0	7	12	9	3	0	3 a 6
Dwight, Springfield	730,000	x	x	x	3	11	18	20	16	9	6	4 a 8
Great Falls, Somersworth, N. H.	1,500,000	0	0	9	5	3	17	20	a12	10	8	6
Hamilton, Lowell	1,200,000	0	5	8	0	6	7	14	10	6	5	3 a 6
Jackson, Nashua, N. H.	480,000	5	25	3	2	3b16	20	18‡	9	8	4	a 7
Lawrence, Lowell	1,500,000	10	3	7	2	7	16	14	15	10	3	6
Laconia, Saco, Maine	1,000,000	x	x	x	x	x	x	x	3	3	0	0
Lancaster, Clintonville	1,000,000	x	x	x	x	x	x	x	x	0	0	0
Massachusetts, Lowell	1,800,000	x	x	0	3	4	14	20	20	19	6	6
Manchester Mills,§ Manch., N. H.	1,200,000	x	x	x	x	x	x	x	.	loss	0	0
Merrimac, Lowell	2,500,000	11	8	12	9	16	10	30	16	9	7	r25
Nashua, Nashua, N. H.	1,000,000	10	0	8	3	6	8	20	18	6	3	4 a 8
Otis, Ware	450,000	0	0	0	0	10	10	12	8	13	6	18
Palmer, Three Rivers	160,000	20	8	10	6	9	16	25	21	9	3	0
Perkins, Springfield	700,000	5	5	6	0	9	20	20	13	9	6	2 a 6
Salm'n F'ls,|| Salm'n F'ls, N. H.	1,000,000	x	x	x	x	x	x	x	25	8	8	4 a 8
Stark, Manchester, N. H.	1,250,000	x	x	8	2	0	14	18	20	11	loss	3
Suffolk, Lowell	600,000	11	8	11	3	6	14	20	18	8	6	5
Thorndike, Three Rivers	375,000	0	0	11	3	5	14	15	15	3	3	6
Tremont, Lowell	600,000	11	7	8	2	6	16	18	16	7	2	3
York, Saco, Maine	1,200,000	16	12	9	7	6e17	18	20	11	6f3		

* Almost all these were taken from the books of the companies, or furnished by the treasurers.

† These dividends are upon \$1,000 a share. The valuation has been reduced, and the shares are now valued at \$750.

‡ The original investment of \$1,000,000 was all lost.

§ Wool is mixed with cotton in the greater part of their goods.

|| This company became embarrassed, and the property was sold to the present proprietors at one-third of the cost.

(a) Also a dividend in stock of 25 per cent. The shares in this company were originally \$1,000; but, owing to embarrassments, new shares were created at \$200, which is now considered par. Upon the costs these dividends would be much smaller. (b) Also 10 per cent. from profits made previously. (r) This was principally in new stock, and was not earned this year. The dividends of this company have been much larger, owing to having reserved their profits in years previous to these. (e) Also a dividend from previous profits of 10 per cent. (f) And a dividend of stock of 20 per cent. Manufacture fancy wove goods.

The mark "x," in the statement of dividends of New England mills signifies that the

"The following table, prepared by Messrs. Head and Perkins, Stock Brokers, shows the present price of shares, and when there have been no sales, the price they would bring if put into the market. The difference between the par and the present price is just so much loss, which should be subtracted from the dividends, in order to judge fairly of its business.

MARKET AND PAR VALUE OF SHARES IN FIRST CLASS COTTON MANUFACTURING ESTABLISHMENTS.

	Market price.	Par value.		Market price.	Par value.
Appleton - - -	800	1,000	Manchester Mills - - -	750	1,000
Atlantic - - -	670	1,000	Massachusetts - - -	900	1,000
Boott - - -	850	1,000	Merrimac - - -	1,120	1,000
Boston - - -	600	750	Nashua - - -	450	500
Cabot - - -	750	1,000	Otis - - -	1,050	1,000
Chicopee - - -	600	1,000	Palmer - - -	750	1,000
Cochecho - - -	500	650	Perkins - - -	750	1,000
Dwight - - -	800	1,000	Stark - - -	800	1,000
Great Falls - - -	185	200	Suffolk - - -	900	1,000
Hamilton - - -	770	1,000	Salmon Falls - - -	450	500
Jackson - - -	840	800	Thorndike - - -	650	1,000
Laconia - - -	850	1,000	Tremont - - -	875	1,000
Lancaster - - -	315	450	York - - -	930	1,000
Lawrence - - -	900	1,000			

"Many smaller mills have been equally successful, and many have embarrassed the owners, and passed into other hands during the same period.

"We shall hereafter give some facts in regard to the value of water-power at the present time in the coal districts of England, which will show that, after long experience, the English manufacturers prefer to buy water at a higher price than is paid in any part of this country, though they can have coal for their steam-power at from 4 to 5 shillings a ton, certainly as low as in any of the cotton-growing States."

So far Mr. Lawrence,—nevertheless the papers in that region recently, represent the factories in Carolina and Georgia as doing a good business; while we very much doubt whether, on the whole, the entire capital in land, labour, &c., employed in agriculture in some states south of Delaware, yields the one-tenth of one per cent., if in making up the amount, we strike, as we should do, a balance between the aggregate melioration and deterioration of the land throughout the State—for, is there not, on the whole, more subtracted than is added to its fertility, diminishing the capital by the amount of the difference? These are the questions worthy to employ the careful deliberation of legislation, and which they should take measures to ascertain, by the establishment of statistical bureaux and otherwise. But alas! too many legislators think more of the *per diem*, than of the appropriate duties of that *highest of all offices—the making of a country's laws!*

ON OFFERING PREMIUMS FOR FAT ANIMALS.

It has been, with strong show of reason, suggested in an English paper, that where premiums are offered for *fat* animals, the candidate should exhibit a Dr. and Cr. account, and be expected to prove that the whole process of rearing and fattening was a profitable one. "I would," says the writer, "suggest, as an incentive to exertion, that the Agricultural Society should

mills were not in operation during those years. In many cases there were losses where the mark is "o." There are other establishments as large as these, which have been embarrassed by deficient water and other causes, which prevent their being placed in this list of first class mills.

offer 100*l.*, to be given at the next meeting for the six best oxen ready for the London markets, each returning to the owner a fair profit for his maintenance—a Dr. and Cr. account to be produced. Nothing should be reared or fed on a farm without the prospect of gain.”—*Falcon*.

Cattle shows should not be conducted on the principle of Menageries or Museums, where anything will answer that will serve to attract and gratify the idle or the curious. They should illustrate only what is economical, useful, and exemplary; and, as said above, no premium or distinction should have the sanction of a society, unless it be proved that it would be advantageous and profitable for farmers generally to aim at like results—whether it be a big or fat crop or animal. To give premiums for grossness or singularity, or monstrosity, is worse than ridiculous on the part of those who award them, and an insult to the public judgment.

HEMP AND FLAX.

OUR attention has been invoked to this subject, by a distinguished member of Congress from the west, on which account, even independent of its intrinsic and obvious importance, we desire to collect the best information to be had, and especially as to any improvement in the machinery of preparation and manufacture, that may promise to place it nearer, in point of cost to cotton fabrics.

We are well aware that in the following items cut from English papers just received, there is little or nothing new and practical. Our object now is merely to start the inquiry—to unkennel the game—intending to pursue it with such force and by all the lights we can command.

Some years since, if we remember, the American Institute proclaimed the discovery of the great desideratum, in an invention by a Mr. Billingsly. Since then, there was exhibited by that active and distinguished promoter of agricultural improvements, Lewis Sanders of Kentucky, a contrivance invented by Col. Anderson of Louisville, of the efficacy of which we entertained the strongest hopes—for we know of no one whose inquiries had been so extensive or directed in a spirit and with a judgment more likely to result successfully—yet we have lately heard nothing of it. Should this respectful inquiry for information meet the eye of either of these gentlemen, as we will endeavour to make it, we should be grateful for any attention they may be pleased to bestow on it. The subject is one which interests a large portion of the United States, and is in itself one of great importance as connected not only with the wealth of the western country, but almost with the independence of the whole country. In fact, we do not see why hemp culture may not, when they are penetrated by railroads, as even we hope to live to see them, be a fruitful source of income to the rich valleys of the Alleghanies, from Maryland to Georgia. Let us have light—surely not a little may be expected to emanate from the office of the commissioners of the navy, to which, as to other sources, we shall have recourse.

Cultivation of Hemp.—Hemp may be cultivated on the western coast of Ireland, where it would be of great use, as affording material for the nets, lines, and cordage of the fishermen, who are generally destitute of these necessary articles. It might be grown by themselves, and scutched, spun, and twisted, or netted, by their wives and daughters. The quantity of this article imported, annually, into Great Britain and Ireland, is about 45,000 tons, valued at 1,600,000*l.* About one million sterling of this comes from Russia. In entering upon the cultivation of hemp, the first thing to be attended to is the selection of proper soil; the best suited for hemp is a deep black vegetable mould, with a low situation, and inclined to moisture; it does well on a rich clayey loam, and old meadow

land is well adapted for it. The mode of preparation, and the place in the rotation, are the same as for flax. The proper season for sowing is April, as soon as there is no danger of the young plants receiving injury from the frosts. The seed is sown broadcast, from two to three bushels to the statute acre, according to the quality of the land. The quality of the seed must be fresh, heavy, and bright in colour. Hemp is one of the few plants employed in the agriculture of these countries, in which the male and female flowers are in different plants, which circumstance has some influence in its management, so far as taking it off the ground is concerned. When the crop is grown entirely for the fibre, it is pulled when in flower, and no distinction made between the male and female plants. But, as is most commonly the case when it is cultivated with a view to both fibre and seed, the usual practice is to pull the male plants, the stalks of which are easily known by their yellowish hue and faded flowers as soon as the setting of the seed in the females shows that their presence is no longer necessary. The reason for thus pulling the male so long before the female is, that the latter requires four or five weeks to ripen the seeds. The operation of pulling the females commences when the seed is ripe, which is known by the brownish hue of the capsules and the fading of the leaves. The after treatment, such as steeping, &c., is the same as flax.—*T. S.*

Dry Process of Preparing Flax.—In the year 1810, a new method of dressing flax was patented, by which the woody matter was separated from the fibre without steeping it, by means of mechanical action, and then the flax was bleached by simply washing it in warm water. It would appear that the colouring matter is not chemically combined with the fibrous matter, while the plant is vegetating, or after it is pulled, but that the chemical combination takes place while the plant is steeped in water. The object of this steeping is to induce a fermentation, which loosens and destroys a cement which bound the fibres of flax to each other and to the wood. The fermentation weakens considerably the strength of the flax fibres, and even destroys many of them. This dry preparation, therefore, if it be practicable on a large scale, would be a prodigious improvement. It would render the flax fibres much stronger, it would increase their quantity, and it would save the expense of the materials employed in bleaching the linen. It has been stated that the dry process has uniformly failed of success, when tried in Ireland. If this account be true, it is extremely difficult to explain it. About the time when the patent was taken out, the process was performed by workmen, under the direction of the patentee, at Old Bow, near London, with the most complete success; not merely upon handfuls of flax, but upon whole fields of it. Indeed, the whole is so extremely simple, that it is difficult to explain how it should fail, if properly conducted. It is therefore highly probable, that the prejudices of the Irish, with which it would have had to contend at that day, were too powerful for it; but that as soon as it shall meet with fair play, it will be found just as practicable, and certainly much cheaper and better, than the methods at present in use. It is during the steep, then, that flax acquires its permanent dark colour; and four processes in bleaching are requisite to restore it to its original white colour, or to separate the colouring matter, which is chemically combined with the fibres of the flax.—*T. S.*

CHINESE HEMP.

FRENCH agriculture has recently been enriched by a very important new production. This precious article is the Chinese hemp, the *Lo ma corchorus*, the seeds of which were imported into France by M. Stier, a member of the French embassy in China, and has been cultivated and naturalized at Marseilles by M. Garnier Savatier. This hemp, the reproduction of which is now secured by the seeds which have ripened in the best possible manner, grows to a height of twenty-four or twenty-five feet; the stalk is from five to six inches in circumference; each plant produces from two to three kilogrammes of seed, and furnishes thread enough to make a yard of superb lawn, superior in beauty and quality to any obtained from French materials. The cultivation of this plant in the south of France will be the more precious to the country as a climate of the temperature of that region is necessary for its fructification, and its seeds will find a ready sale in other countries where the seeds will not ripen, but where the filaments may be produced. The South will thus have a double advantage. Some specimens of this plant were exhibited at the Agricultural Show at Montpellier. The height of it was from twenty to twenty-two feet.

For "The Plough, the Loom, and the Anvil."

"EVERY MAN HIS OWN GARDENER."

GARDENING OPERATIONS.—March is a busy month with the gardener, requiring energy and judgment, with a determination to accomplish whatever he undertakes. No farmer should be without an abundant supply of vegetables throughout the year; it is a daily comfort, a precursor of health, and with many a luxury, that from a dilatory disposition he rarely enjoys.

The first crops in the ground should be peas, beets, radishes, potatoes, carrots, cabbage, and onion sets.  Manure well and dig or plough deep. Sow extra early and marrowfat peas in rows, the former two feet and the latter three feet apart, and three inches deep. Beets in rows eighteen inches apart, and the seeds about two inches apart and one inch deep. Scatter a few seeds of early scarlet radish over the ground before it is raked; they will be up in a few days, and fit to pull before the others have made much progress; pull the radishes as soon as ready, hoe the ground well, and thin out the beets next month to four inches apart. Sow a patch of yellow or white summer radish. Sow early butter and Indian lettuce; the first will be ready in May, the other in June. Sow celery in rich, light, warm soil; make the earth fine, and water freely; it is a profitable market crop. Sow onion seed very thick in shallow drills to grow sets for next season. The early horn and Altringham carrots are the best flavoured; sow the former in drills eighteen inches apart, and the latter twenty to twenty-four inches. They do not like richly manured soils. Sow tomatoes in a pot or box for an early crop; place it under glass or in the kitchen window, where it will appear quickly and be ready to plant out about the end of April or towards the middle of May. A few early turnips are advisable; if you do not sow early, you will not have a crop till the fall sowing. Cabbage are indispensable (so I think); sow early York, oxheart, and drumhead, and make a second and larger sowing of the latter to plant out in June, for fall and winter use; also remember red Dutch cabbage for pickling, they are a beautiful garniture for the table, and to many very palatable.

In *southern latitudes*, they should now plant beans of every kind; **EARLY SIX WEEKS**, or snap-shorts as dwarfs, and **LIMA** for poles; the latter require to be four feet apart, and three feet from hill to hill; plant the dwarfs between the rows of poles; they will be off before the runners shade them. Economy of space is a nice art in gardening; and study to arrange crops to have all the ground profitably engaged. Sow peppers, cucumbers, melons (the netted citron is the best table melon, and the mountain sprout is the best water melon); plant okra, tomato, bush and green squash, egg-plants, in very rich ground, eighteen inches to two feet apart; take off an early crop of radishes from the same ground, or a crop of early cabbage lettuce. Com. Adams' extra early for the first, and sugar for second crop.

FRUITS—The greatest error in country life is the *putting off* system of planting; the hurry of spring delays it till the fall. *Time* never procrastinates, and is again at hand, the same delay and apology are again employed; we put it off till another year, which soon rolls round, and we again use another subterfuge, and pass it off because we cannot get or purchase trees with the fruit hanging ripe and luscious. Plant now the best you can get; and if you cannot beg or buy trees, sow and plant seeds; if there is no orchard-room, plant along every fence apples and grape vines alternately, twenty feet from plant to plant; use the best soil you have or can procure; dig the holes eighteen inches deep, and three to five feet wide; spread, after planting, a few forkfulls of manure or litter over the surface round the tree; it is both a protector in dry weather and a nourisher in growth. A handfull of guano mixed with a shovelfull of leechwood ashes, spread over the surface, under the litter, is very stimulating. Plant pear trees in or adjoining the garden—or prepare a small orchard for them. Plant fruit trees, and you will have a great chance of reaping the harvest. Cover the barns with grapevines and apricots; surround the pig-pen with plum trees, and plant the cherry trees on a dry deep soil; select early and late sorts, which gives a longer period of *pie-time*. Plant strawberries in rich deep soil, well manured, alternately one foot and two feet from row to row, giving space to walk amongst and dress them when required; nine inches from plant to plant in the row will do; plant for the first season a row of cabbage in the wide spaces.

If you have old apple or pear trees of worthless sorts, thin out the old spray wood and small shoots, and graft on fine sorts; a good kind requires no more care nor culture than a crab-apple or choke-pear, with the difference of four hundred per cent. in your favour. Graft plums and bad cherries.

FLOWERS.—Those cheerful and loving emblems of innocence must have their allotted spot; no home can have all its associations without the rose and the lily—they are fit objects to be cultured by the female hand, objects that sweeten household cares, that

elevate the aspirations of the heart, that diffuse the finest feelings in the youthful mind; where flowers are, peace reigns.

[Old people of Maryland and Virginia, on the wrong side of sixty, let your memory carry you back to your childhood. Were not the gardens of your mothers and grandmothers larger, better tended, and more variegated with pinks, and lilies, and roses, and fleurs de lis, and snowballs, and the mock-orange bush, in which the confiding little sparrow built his nest, than gardens are now? Why is it so? It's a melancholy retrospect, but still the question will recur—Why is it so?]

ON THE SIZE AND WEIGHT OF POULTRY.

Mr. ASA RUGG, writing for the Boston Cultivator, makes some interesting observations on this subject. He says, among other things:—

“I have no hesitation in saying, that in the *large breeds and varieties*, we are much in advance of the English breeders: for any cabin boy knows that the fowls shipped for use on the voyage in Liverpool, will not favourably compare with those procured in the ports of Philadelphia, New York, or Boston. And as some of your readers may, in the present stage of the ‘*chicken fever*,’ be inclined to send to England for some of their large fowls, perhaps the Cochín China, as they seem to be the chief attraction, I will record some of the results of my experience and correspondence, for their especial benefit.”

Of the famous Cochín China fowl, presented to the Queen of England, and of which so much (probably in great measure for that reason), has been said, Mr. Rugg observes:—

“Now, I doubt whether the fowl, as thus described, is anything more or less than the wild Shanghæ, found in the mountains of Northern China, of which I have a few beautiful specimens imported in 1847. As we have no history of the queen's fowls, of course we are left to infer the place of their nativity from their reputed characteristics. They agree so much in description, and, also, as I shall show, in weight, with my pure wild Shanghæ, which weigh, when full grown, from 15 to 16 lbs. per pair, that I have little or no hesitation in saying they were born and bred in Northern China, and not in Cochín China. My Chittagongs and Cochín China which come, the one from the vicinity of Calcutta, and the other from Southern China, are, as I shall show, considerably larger. From gentlemen with whom I have corresponded I recently learned the weights of several specimens of fowls in England, which I shall now put in juxtaposition with some of my own.

POULTRY RECENTLY WEIGHED IN ENGLAND.

Dorking cock, 2 years old	.	.	.	.	7 lbs.	4 oz.
Dorking cock, age not named	.	.	.	.	6	12
Malay cock, young	.	.	.	.	8	
Cochín China cock, two years old	.	.	.	.	7	9
Cochín China stag, 2 years old	.	.	.	.	5	8
Cochín China hen, moulting	.	.	.	.	5	5
Cochín China stag, moulting	.	.	.	.	5	2
Malay hen, moulting	.	.	.	.	5	6
Malay pullet, moulting	.	.	.	.	4	5
Dorking hen, full grown	.	.	.	.	6	2
Dorking pullet, full grown	.	.	.	.	4	6

“I refer your readers to Mr. Dixon's treatise for a more extended list of weights, who will still further confirm the assertion, that in point of weight, our fowls are superior.

POULTRY WEIGHED THIS DAY IN MY OWN YARD.

Cochín China cock, 13 months old	.	.	.	.	11 lbs.	4 oz.
Cochín China stag, 8 months old	.	.	.	.	9	12
Cochín China pullet, 7 months old	.	.	.	.	6	10
Cochín China pullet, 8 months old	.	.	.	.	7	2
Chittagong stag, 8½ months old	.	.	.	.	10	6
Chittagong pullet, 7 months old	.	.	.	.	8	7
Chittagong pullet, 8 months old	.	.	.	.	9	2
Chittagong pullet, 6 months old	.	.	.	.	6	12
Chittagong hen, 2 years old	.	.	.	.	10	6

“I have a Chittagong hen 3 years and 3 months old, which last Spring weighed 13½ lbs., she being, however, a *rara avis*, should not be regarded as a fair sample.

“The English fowls were weighed about seven weeks since, when scarcely over the effects of moulting; this might make a difference of a pound or a pound and a half in

their favour over fowls weighed now ; but even then, the balance is still heavily in our favour."

Mr. R. S. COLT, of Roswell House, New Jersey, to gratify our (the reader will perhaps say idle) curiosity, lately had some of his poultry, which we had seen and admired, weighed alive. His

Wild turkey gobbler, 17 months old, weighed	20 lbs.
Black turkey gobbler, 18 months old, weighed	21
Malay dunghill cock, 18 months old, weighed	11
Black Java dunghill cock, 17 months old, weighed	10
Jersey Blue, 17 months old, weighed	9
One pair black Java pullets, 7 months old, weighed	12

This was, he says, on "the run of the yard, not stall fed."

We don't know how it is exactly with his other fowls—but for his swans and beautiful geese of various breeds, we have observed something very much resembling yellow corn, lying constantly on the sandy shores of the lake they so much enjoy and ornament.

We have lately had the pleasure to receive from him a letter, which, though not meant for publication, contains various items well worthy of the space they will occupy in another number.

TO CORRESPONDENTS.

WE occasionally receive letters from some of our friends who believe that their road to free trade which lies in the direction of the tariff of 1846, is shorter than ours which lies in the direction of affording to the farmer and planter, the aid that is necessary to enable them to draw to their sides the consumers of food and cotton, with their looms and anvils, and who desire to see the opposite side of the question. One such is now before us, requesting us to copy a chapter of *Say's Political Economy*. To that suggestion we shall give attention as soon as we shall have finished the series of papers now in progress, and which occupy, and will for a short time continue to occupy, all the space we can devote to the political economy of agriculture. In the meantime, we beg our friends and correspondents, and all who entertain similar views, to read carefully what is here set down, and if after having done so, they shall feel disposed to answer it, to do so in our columns. We desire them to remark that the question to be settled is, which is the shortest, surest, and most certain road to *perfect freedom of trade*. Their object and ours are precisely the same, and we differ only as to the means. Mr. Say furnishes us with a theory of free trade, but it is unnecessary that we should study his book to obtain it. What we desire to do is to show what are the distracting causes which have thus far prevented the establishment of such freedom, and must continue so to do, and to show that there is a remedy for the disease. Doctors are sometimes more necessary than green grocers or butchers. If the former were not called in, when occasion required it, the services of the latter would be likely to be soon dispensed with.

THE SPREAD OF LIGHT IN AFRICA. "*And to them which sat in the region and shadow of death, light is sprung up.*" To every benevolent mind the "glad tidings" from this benighted region of the world must prove to be truly gratifying. Among other evidences of the stability of the settlement and of its social progress, we were hardly prepared to hear of the formation of an agricultural society by the settlers at Bassa Cove.

One condition of admittance is that "no person belonging to this Association shall send to America through its officers, less than 100 lbs. arrowroot, or than 200 lbs. ginger, or than 100 lbs. coffee, or less than one barrel of pepper, and all persons who think that they can come up to the above standard, may become a member of this association."

The officers are WM. HARRIS, *President*; ISAAC JACKSON, *Vice President*; G. L. SEYMOUR, *Secretary*.

There are many other members who have pledged themselves, and who think that they will be able to make small shipments next year, say as much as 2150 or 2200 lbs. of arrowroot, and other articles accordingly, such as ginger, coffee, pepper, &c.

We shall have pleasure in sending, through the estimable secretary of the Colonization Society, Mr. CRESSON, a copy of "The Plough, the Loom, and the Anvil," and some other volumes, that may prove so many lights in the wilderness, the darkness whereof may make even the feeblest ray acceptable.

READINGS FOR MOTHERS AND CHILDREN.

A LETTER FROM THE LATE WILLIAM WIRT TO HIS LITTLE DAUGHTER OF EIGHT YEARS OLD.

THE saying is, unfortunately, as true as it is old, that promises are like pie crust—made to be broken. Thus have we too often broken, in “THE PLOUGH, THE LOOM, AND THE ANVIL,” the promise to maintain unbroken the department opened in it, for appropriate “READINGS FOR MOTHERS AND CHILDREN.”

If there be any trait more admirable than others in the character of the late W. WIRT, as given by KENNEDY, in a style and with feelings that do honour alike to the writer and his subject; it is in the all-absorbing devotion of the former, as evinced in all his letters, to *his children and their mother!* We know not when we have read any work with livelier interest or more unqualified admiration, of the author and his theme. Enough to say that they are suited to and worthy of each other, and that not only the family and friends of Mr. Wirt, but the public, may be congratulated that the memorials of his goodness and his greatness of heart and of mind, were consigned to a biographer who has proved himself so well qualified to deal adequately and justly, with a task at once so responsible and so delicate. Having, in the midst of toil and anxiety, found in these volumes refreshment such as recruits the exhausted traveller when he lights, unexpectedly, on a limpid and cool spring on the way side; we feel a sort of obligation to add, even our humble testimony, to never having read any memoirs better fitted than these to form a part of every *family library*. In philosophy sound—in morals chaste—and in style at once pure and eloquent but entirely free from ostentation; they fairly present Mr. Wirt and his bosom companion, as models, respectively, in their public and in all their social relations.

We are sure that every mother and every daughter will share the pleasure we enjoyed

in reading the following letter thus introduced by the accomplished biographer:—

“Passing from these topics,” says Mr. Kennedy, “the reader will be pleased with the glimpse, which the next letter affords, into the privacy of domestic life, and the affectionate solicitude with which the subject of our memoir devoted himself to the education of his children. His eldest daughter, Laura, was now eight years of age. He has already marked out her course of study; and his aim is to awaken her mind to a perception of the value of the discipline he inculcates. To that end, this letter is addressed to her, in language of such plain and simple structure—almost in words of single syllables—as may reach the comprehension of a child, but, at the same time, wrought with admirable skill into a moral lesson of exquisite beauty.

“There is nothing amongst Mr. Wirt’s productions more pleasantly characteristic of himself than this letter to his child.”

TO LAURA H. WIRT.

Richmond, September 13, 1811.

MY DEAR LAURA:—

I would have answered your letter sooner, but that my courts and my clients hardly leave me time to write to your dear mother, to whom, of all other earthly creatures, you and I owe our first duties. But I have not loved you the less for not writing to you: on the contrary, I have been thinking of you with the greatest affection, and praying for you on my bended knees, night and morning, humbly begging of God that he would bless you with health and happiness, and make you an ornament to your sex, and a blessing to your parents. But we must not be like the man that prayed to Hercules to help his wagon out of the mud, and was too lazy to try to help himself:—no, we must be thoughtful; try our very best to learn our books, and to be good; and then, if we call upon our Father in heaven, he will help us. I am very

glad your Latin grammar is becoming easier to you. It will be more and more so, the more you give your whole mind to it. God has been very kind in blessing you with a sound understanding; and it would be sinful in you to neglect such a great blessing, and suffer your mind to go to ruin, instead of improving it by study, and making it beautiful, as well as useful, to yourself and others. It would be almost as bad as it would be for Uncle Cabell to be so lazy himself, and to suffer his labourers to be so lazy, as to let his rich low grounds run up all in weeds, instead of corn, and so have no bread to give his family, and let them all starve and die. Now your mind is as rich as Uncle Cabell's low grounds; and all that your mother and father ask of you, is, that you will not be so idle as to let it run to weeds; but that you will be industrious and studious, and so your mind will bring a fine crop of fruits and flowers.

Suppose there was a nest full of beautiful young birds, so young that they could not fly and help themselves, and they were opening their little mouths, and crying for something to eat and drink, and their parents would not bring them anything, but were to let them cry on from morning till night, till they starved and died, would not they be very wicked parents? Now, your mind is this nest full of beautiful little singing birds; much more beautiful and melodious than any canary-birds in the world; and there sit fancy, and reason, and memory, and judgment,—all with their little heads thrust forward out of the nest, and crying as hard as they can for something to eat and drink. Will you not love your father and mother for trying to feed them with books and learning, the only kind of meat and drink they love, and without which those sweet little songsters must, in a few years, hang their heads and die? Nay, will you not do your very best to help your father and mother to feed them, that they may grow up, get a full

suit of fine glossy feathers, and cheer the house with their songs? And, moreover, would it not be very wrong, to feed *some* of them only, and let the rest starve? You are very fond, when you get a new story-book, of running through it as fast as you can, just for the sake of knowing what happened to this one, and that one; in doing this you are only feeding one of the four birds I have mentioned,—that is, *fancy*, which, to be sure, is the loudest singer among them, and will please you most while you are young. But, while you are thus feeding and stuffing fancy,—reason, memory and judgment are starving; and yet, by-and-by, you will think their notes much softer and sweeter than those of fancy, although not so loud, and wild, and varied. Therefore, you ought to feed those other birds, too: they eat a great deal slower than fancy: they require the grains to be pounded in a mortar before they can get any food from them; that is, when you read a pretty story, you must not gallop over it as fast as you can, just to learn what happened; but you must stop every now and then, and consider why one of the persons you are reading of is so much beloved, and another so much hated. This sort of consideration pounds the grains in a mortar, and feeds reason and judgment. Then you must determine that you will not forget that story, but that you will try to remember every part of it, that you may shape your own conduct by it,—doing those good actions which the story has told you will make people love you, and avoiding those evil ones which you find will make them hate you. This is feeding memory and judgment both at once. Memory, too, is remarkably fond of a *tü-bit* of Latin grammar; and, though the food is hard to come at, yet the sweet little bird must not starve. The rest of them could do nothing without her; for, if she was to die, they would never sing again,—at least not sweetly. Your affectionate father,

WM. WIRT.

RECEIPTS.

Mix any kind of essential oil with paste, and it will never become sour or musty.

◆
To cure a Ring worm.—Infallible.—Heat a shovel to a bright red—cover it with grains of Indian corn—press them with a cold flat iron. They will burn to a coal and exude an oil on the surface of the flat iron, with which rub the ring worm, and after one or two applications it will be *kilt* as dead as Julius Cæsar.

Fried Fowl.—When you have cut up the fowl, put the pieces into a basin with a little salt, pepper, a spoonful of oil, and two of vinegar, and a little chopped eschallot, stir them well in it, and let remain for half an hour, have ready a quantity of batter, and take a fork and dip each piece one after the other into it, and then let it drop into the frying-pan, in which is sufficient hot fat to cover them; fry to a nice colour, and serve in a pyramid, with fried parsley over, or any sauce you like under.

The Plough, the Loom, and the Anvil.

VOL. II.

APRIL, 1850.

No. X.

THE HARMONY OF INTERESTS :

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

CHAPTER TENTH.

HOW PROTECTION AFFECTS THE FARMER.

AMONG the large exporters of food are Ireland, Canada, Russia, and the United States.

The first exports both food and population. The bulk of her trade is altogether outward, and the food has to bear all the cost of the voyage out and home. The yield to the producer is therefore small, and tends rapidly to diminish, the consequences of which are, famine, pestilence, and depopulation.

The second exports food and lumber, and imports some population for home consumption, and much that is exported to the United States. The excess of exports is, however, sufficiently great to throw nearly the whole weight of the voyage out and home upon the producer.

Neither of these countries has any protection against the colonial system. The food they export comes back to them in the form of cloth and iron, duty free, and almost freight free, because the bulk of the traffic is in the outward direction.

Russia exports food, but she protects manufactures, and thus makes a market for much of it at home. Her capacity to supply grain is by one authority stated to be equal to 17,000,000, and by another 28,000,000 of quarters, (153 and 252 millions of bushels of 60 pounds weight,) and we are told that—

“In the years when there is no foreign demand for this surplus, a portion of it is employed, with little regard to economy, in fattening cattle for the butchers, and for the sake of the tallow. Much is absolutely wasted, and the remainder, left unthreshed, becomes the prey of birds and mice.” Also that “if a foreign market could be found for it, Russia could easily export annually 50,000,000 of quarters of grain, (equal to 450,000,000 of bushels of sixty pounds weight.)”*

The system of that country is adverse to the growth of wealth and intelligence. Large armies and hosts of officials are maintained out of her heavy taxes, paid from the earnings of the producing classes, while the existence of serfdom, and the necessity for giving so large a portion of the lives of the healthiest and best-formed of the population to the business of carrying sabres and muskets, tends to prevent the existence of any hope of improvement; and without hope there can be little disposition for exertion. Nevertheless, as we see, the Russian has food to waste, while Irishmen perish by tens of thousands of starvation.

In this country the system of protection exists. It is now limited to thirty

* London Economist.

per cent.; and for the last twenty years it has but once, and for a very brief period, been at a lower point. By its aid there has been produced a diversification of pursuits, that enables men to economize much time and many things that would otherwise be wasted, while women and children find employment at such wages as enable them to be large consumers of both food and clothing. Wages are high, and hence it is that there is so large an import of the most valuable of commodities—man.

We imported last year about 300,000 persons. Estimating their consumption of food at twenty cents per day for each, there was thus made a market on the land for the products of the land to the extent of *twenty millions of dollars*. Their transportation required the constant employment of 250,000 tons of shipping, and ships carried freight to Europe at very low rates, because certain of obtaining valuable return cargoes. The farmer thus obtained a large home market, and the power of exporting cheaply to the foreign one, and to the conjoined operation of these two causes is due the fact that wheat and flour have continued so high in price.

We may now, I think, understand many curious facts now passing before our eyes. Food is so abundant in Russia that it is wasted, and yet among the large exporters of food to Great Britain is this country, in which it sells at a price almost as high as in Liverpool, and now even higher. The produce of Russia has to bear all the charges out and home, and the consequence is, that the producer remains poor and makes no roads, and thus the cost of transportation, internal and external, continues, and must continue great. The farmer of the United States sends his produce to market cheap, because the return cargo, being chiefly man, is valuable, and the space it occupies is great. He therefore grows rich, and makes roads, and canals, and builds steamboats; and thus is the cost of transportation, internal and external, so far diminished that the difference in the price of a barrel of flour in Pittsburgh and in Liverpool is, when we look at the distance, almost inconceivably small.

The bulk of the trade of Canada is outwards; and the consequence is that outward freights are high, while our imports of men and other valuable commodities keep them low with us, and therefore it is that the cost of transporting wheat and flour from our side of the line is so much lower than from the other, that both now pass through New York on their way to Liverpool.* Hence it is that there has arisen so vehement a desire for commercial re-

* From one of the journals of the day I take the following extract from a Canadian letter:—

“Our commercial relations with your Union are a subject of great anxiety with us at the present time. Wheat is worth from 2s. to 3s., York, more on your side of the Lake than on this. This is owing to two causes: the 20 per cent. duty you impose upon our grain when imported and sold in your market, and the want of a sufficient number of resident wheat buyers who have sufficient capital to enable them to take advantage of your bonding Act. If your Cabinet has determined to annex us, they will refuse us reciprocity. In 1847, we exported of Canada wheat, 3,349,686 bushels, and in 1848, 3,413,397. We shall export, at least, twice as much this year; for every acre of land that was in a condition to grow wheat was sown with that grain, and the crop throughout the whole of Western Canada, except perhaps the Middle District, is unusually heavy.

“The Examiner’ estimates, and I think with tolerable accuracy, that our farmers will this year lose \$1,500,000, from a want of having free access for their produce to your markets. The Convention of Delegates from each of these Provinces, now sitting at Halifax, have under consideration the question of securing a more easy interchange of commodities between the Provinces and the States. A notion has got abroad, that if Canada, Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland were united, they would then have a better chance of obtaining free trade from you than in their present isolated condition. It is rumoured that the Home Government, for some

ciprocity, and even for annexation. The protective system has thus not only the effect of bringing consumers to take their places by the side of the producer, facilitating the consumption on the land of the products of the land, and facilitating also the exportation of the surplus to foreign markets, by diminishing outward freights, but the further one of producing among our neighbours a strong desire for the establishment of the same perfect freedom of trade that now exists among the several States, by becoming themselves a part of the Union. Protection, therefore, tends to the increase of commerce and the establishment of free trade, while the British system tends everywhere to the destruction of commerce and to the production of a necessity for restriction.

We see, thus, that if we desire to secure the command of that which is falsely called "the great grain market of the world," it is to be effected by the adoption of such measures as will secure valuable return freights. The most costly and the most valuable of all are men. The least so are pig-iron and coal. The more of the latter we import, the larger will be our surplus of food, the higher will be the outward freight, internal and external, the greater will be the waste, and the poorer will be the farmer. The more of the former we import, the smaller will be our surplus of food, the lower will be the outward freights, and the more numerous will be the commodities that can go to Europe, to be given in exchange for luxuries that now we cannot purchase.

Were we now importing a million of men annually, the downward freights on our canals and railroads would be greatly diminished, while the outward freight across the ocean would be little more than would pay the cost attendant upon loading and unloading it, and yet we should be building ships and steamboats, and making railroads at a rate of which we could now form no conception.

By aid of these men, coal and iron would be produced by millions of tons, and the increased facility of obtaining food and iron would give new facilities for building cotton and woollen mills, and type-foundries and printing-offices, and all the men employed in them would be large consumers of food, and thus would the farmer gain on every hand.

The labourer, in Ireland, obtains 6*d.* or 8*d.* for a day's labour when employed, but the average of the year is even less than the former sum. He is our great customer for Indian corn, the cost of which, by the time it reaches him, is about 4*s.* or five times what it has yielded to the farmer, delivered on his farm. Eight day's labour are thus required for the purchase of a bushel. Transfer that man to the coal-fields of Ohio or Indiana, and he may purchase far more by the work of a single day. He at once becomes a much better customer for food, and is enabled to consume largely of sugar and coffee, to the advantage of the merchant—of wool, to the further advantage of the cultivator of the land—of lumber, to the advantage of the man who has land uncultivated that he desires to clear—of cotton, and indigo, to the benefit of the planter—and thus it is that every interest in the country profits by the transfer of the poor cultivators of Ireland, and of Germany, to the coal fields and iron-ore beds of the Union.

The young Englishman who aspires to be an operative spinner, and now fills

purpose of its own, has recommended this federation, and of course the Colonial puppets who move at the dictation of Downing street, will pretend that a measure which has been forced upon them, originated in the commercial necessities of the Provinces. To obtain the free trade they desire, the Nova-Scotians showed symptoms of a willingness to admit your fishing vessels a little nearer than within three miles of their shores; and Canada would probably throw open her coasting-trade to your vessels, if England will permit her, after the new Navigation Law comes into operation."

the place of the latter in his absence, receives 7s. 6d.—\$1.80 per week,* the price of two bushels of Indian corn. Place him in Alabama, and he will earn the present price of twenty bushels, and he will then eat more and better food, and consume ten pounds of cotton where now he consumes but one.

The hand-loom weavers, of whom England has 800,000, without work for one-third of the number,† consume little food or cotton. Transfer them here, and they will become large consumers of both.

The agricultural labourer of England receives 8s. or 9s. a week, little over the price of a bushel and a half of wheat. Transfer him here, and his services as a miner, or labourer, will enable him to earn the price of five or six bushels. He will then consume more and better food, and largely of cotton.

The poor Highlander, driven from his native hills to make room for sheep, starves in the miserable lodging-houses of Glasgow.‡ Could he be transferred here, he would become a large consumer of food and clothing.

Our present policy is directly the reverse of all this. We are exporting men by tens of thousands to California, and by hundreds of thousands to the West, thus diminishing the power of combination of action, and increasing the necessity for the use of ships and wagons to carry their produce to market. Thus far the immigration has been maintained, and freights to Europe are consequently low, but, with the diminished wages of the labourer, immigration must fall off, and then freights must rise, and thus the same measures that diminish the home consumption must increase the cost of going to the distant market. The cost of the voyage out and home *must* be paid by somebody. If there is no return freight, the farmer or planter must pay the whole. If there is a large and valuable return freight, he need pay scarcely any portion of the cost. To California, we must pay all the outward freight, for there is no cargo to be returned. Bulky articles, the produce of the farm, cannot, therefore, go from here, and the consequence is, that every emigrant to that country is a customer lost to the farmer, and a customer to a diminished extent to the planter.

The most costly and most valuable of commodities, as I have already said, is Man. The more valuable the commodities that can be imported into any country, without going in debt for them, the richer that country will grow; and this is equally true of every State, county, township, town, &c., into which it may be divided. Of this no one can doubt, and yet every portion of the Union is engaged in exporting to the West, to Texas, Oregon, and California, this most valuable of all commodities, receiving

* London Economist, Vol. VI. p. 259.

† Edinburgh Review, October, 1849.

‡ A recent British journal, speaking of the Queen's visit to Scotland, thus describes the effects of the desolating policy that has been pursued in the Highlands:—

"The untilled hills and glens tell their own story most effectually. The sheep farms of twenty miles length and breadth proclaim the dark character of that policy which is fast making of the Highlands a great hunting-ground. Her Majesty is to pass through a land of Ameers. The same wretched policy as that which has desolated Scinde, originating in the same miserable cause—the selfishness and pleasure-seeking of the owners—has laid waste the Highlands. They want a Sir Charles Napier—a legislative if not a military Napier. They need the repeal of the game and entail laws, and with those laws repealed, in twenty years there would be no difficulty in finding a population to welcome the monarch on the beautiful but now desolate shores of Loch Long and Loch Awe. The pines§ would flourish again; and newspaper reporters would not be weighing the question whether there be or be not a habitable house where they might rest within ten miles of Loch Laggan."—*North British Mail.*

§ The standard of the Campbells, who inhabited this region, bore a pine.

nothing in return. We import now hundreds of thousands, yet the old States retain scarcely any of them. All must go West, for the working of mills and furnaces is stopped, and the building of mills is at an end until we have a change of policy. Such is the effect of the colonial system, established for the purpose of preventing combination of action among the people composing various nations of the world, and maintained by the pursuit of measures destructive alike to the interests of the people of England, and of the world at large. "Many of our manufacturers," says a Manchester broker, "have exported to a loss, and if, by so doing, they have kept foreign competition at bay, and checked the increase of industrial establishments abroad, it is an unenviable success; still," he adds, "as this country is doomed to be a manufacturing state, nothing remains but to beat or be beaten."*

These losses are of perpetual recurrence. They are a natural consequence of the "war upon the labour and capital of the world," in which England must "beat or be beaten." They must be paid by somebody, and they *are* paid by the labourers of England, who are compelled to work at diminished wages; but to a much greater extent by the labourers of the world, who are compelled to be idle, earning nothing to pay the farmers and planters for food and clothing, when they would gladly be employed, earning wherewith to feed and clothe themselves and their children.

How small is, under these circumstances, the power to consume food, will be obvious to those who see that three-fourths of the people of England are consumers and not producers, and that yet their import of grain of the last two years of free trade is but two bushels per head. How insignificant is the quantity she takes from us, and trivial the amount when distributed among the people of the Union, may be seen from the following statement of the last two years of comparatively large export:—

	Flour. Barrels.	Wheat. Bushels.	Corn. Bushels.	Corn-meal. Barrels.
Year ending June 30, 1848,	958,744	1,531,000	5,062,000	226,000
" Aug. 31, 1849,	1,114,016	4,684,000	12,721,000	88,000

The last and largest amounts in round numbers, to 10,000,000 of bushels of wheat, and 13,000,000 of bushels of corn. Deducting the transportation, the product of this on the farm may be taken at not exceeding, and probably not equalling \$10,000,000, or less than fifty cents per head for the people of the Union. What is the prospect that even this amount will continue to be exported may be judged by the facts that nothing but the exceeding lowness of freights has thus far maintained the export, and that calculations, based upon the low price of food in Europe, are now being made upon the export of grain to this country.

"The accounts that have reached us from your side about the wheat crop have led to an idea here that it is not improbable the United States may become an importing country for grain, as on some previous occasion about ten or twelve years ago. We regard this as highly improbable ourselves, although Sturges allude to it in their commercial circular to-day. It is said *Mark Lane governs the world's grain prices*: and, if so, the European range may certainly be expected to be very low, for the fall here is fully 5s. to 6s. per quarter, one-sixth of the entire value, within the last month. Oats are down to 16s. per quarter."—*London Correspondent of the National Intelligencer.*

The shipments of both wheat and flour have already fallen off in a most extraordinary degree, since freights have somewhat advanced. In September, flour was carried to Liverpool for 6d. a barrel, and sometimes even less. The lapse of two months has brought the charge up to 18d., and the

* Circular of Du Fay & Co., March 1, 1848.

effect is shown in the following statement of the export from the principal ports of the Union from the first of September to the latter part of November:—

	Flour. Barrels.	Meal. Barrels.	Wheat. Bushels.	Corn. Bushels.
1849	118,000	1,210	212,504	544,874
Last year, same period	491,000	27,754	849,350	3,447,820
Decrease	373,000	26,544	636,846	2,902,946

Notwithstanding the large increase of agricultural population, the quantity of wheat and flour received at tide-water, on the Hudson, shows a diminution, while the only increase is that of about 2,000,000 of bushels of corn, which found a market abroad only because of the very low freights.

The import of men has made a market for \$20,000,000 worth of food, and these people, once here, remain consumers of food, and customers to the farmer, unless compelled to become producers of food and rivals to the farmer.

The "great grain market of the world" has absorbed half as much because of the low freights, but with the advance of freight it is now diminishing, and must still further diminish with the continuance of that advance. "Since the commencement of the California excitement, near seven hundred vessels," we are told,* "have left for the Pacific, many of which will never re-visit us." These ships will not be replaced unless freights be sufficiently high to pay their owners. If immigration go on, they will be soon replaced, and the cost of doing it will be paid by immigrants who come to be customers to the farmer and planter. If it do not, they will not be replaced, and the high freights of the remaining ones must be paid by the farmers and planters seeking customers in Europe.

That immigration will be arrested, must be obvious to all who study the tables given in the third chapter. The difficulty of obtaining food, fuel, and clothing—*i. e.* wages—in return for labour, is increasing. The value of man is falling, and the inducements to immigration are passing away. Should it diminish next year to the extent of 100,000 persons, there will be a loss of market to the extent of \$7,000,000. The California excitement which carried off so very many thousands of the customers of the farmer, with food to feed them on the road,† will no longer exist. Here is another hundred thousand customers lost to the farmer, and with them a demand for another \$7,000,000 worth of food. The European market is being closed. What, then, are the farmers' prospects at this moment?

A comparison of the amount of immigration and the prices of wheat during the last few years, will show how essentially the interests of the farmer are connected with every operation tending to bring the consumer to take his place by the side of the producer:—

Years.	Immigration.	Price of Wheat in Philad.	Price of Flour in N. Y.
1840 .	84,000 .	\$1·00 .	\$5·25 .
1841 .	83,000 .	94 .	5·72 .
1842 .	101,000 .	1·12 .	5·74 .
1843 .	75,000 .	75 .	4·47 .
1844 .	74,000 .	89 .	4·70 .

* New York Herald.

† "Your receipts of beef from Missouri will be very moderate this winter, in consequence of the great demand for cattle to carry emigrants to California."—*Correspondent of the Tribune.*

Years.	Immigration.	Price of Wheat in Philad.	Price of Flour in N. Y.
1845 .	102,000 .	86* .	4.52*
1846 .	147,000 .	1.04 .	5.23
1847 .	234,000 .	1.33 .	5.96 [potato rot.]
1848 .	229,000 .	1.19 .	about 5.25
1849 .	.	.	5.00

If we convert into iron delivered back upon the farm, free of duty, all the food that has been this year exported, we shall find that it will yield 250,000 tons, or twenty-five pounds for every person of the population. Let us now go to the vicinity of a furnace, and see how light, by comparison, is the charge for iron when it is produced on the spot, and paid for in commodities of which the earth yields by tons, as potatoes or hay—or in straw that would otherwise be wasted—or in labour not required on the farm, and then estimate how many tons might have been obtained by the producers of this grain, had they made a market on the land for the products of the land.

Let us now suppose that instead of closing old furnaces we had built fifty new ones, each capable of making 5000 tons, with rolling-mills to convert the product into bars, and had thus applied the labour of some of those immigrants; and that we were now making, as we might readily be doing, 250,000 tons of iron more than was made last year, would not that alone have made a *permanent* market on the land for as much of the products of the farmer as we have exported to England? Would not that have reduced the cost of iron? Would it not have raised the price of labour? Would it not have promoted immigration? Would it not have promoted the building of ships and the reduction of freights? Would not the farmer thus have had the control of the market of England to a much greater extent than he can have under a system that discourages immigration and ship-building? Does not his *power* to go abroad increase with the diminution of the *necessity* for seeking a market abroad? If we were importing largely of raw silk and men from Italy, could we not send cotton yarn to Italy more cheaply than it now goes through England?—and if we were importing silk weavers from France, could we not send to France in return food, in the form of coal and iron, at less cost for freight than that at which they now have English coal and iron that must pay all the cost of the voyage out and home? The greater the value of the import trade—and men are the most valuable commodities we can import—the greater will be the variety of articles we can export.

It is contended that by having two markets to which he *must* resort, the condition of the farmer is improved, and that if he had but the home-market he would have lower prices than at present—that is to say, that if he could sell all he produces at home, he would obtain less than he now obtains by going from home. Directly the reverse is the fact, when men are *compelled* to seek a distant market.

The first questions to be asked in reference to this are—Why is he obliged to go from home? Why does the supply of food increase faster than the demand? For this there are two reasons. First: we do not import consumers enough; and, Second: of those whom we do import, too many are forced to become producers of food, in consequence of the difficulty attendant upon employing themselves in other pursuits when they would be consumers of food. The man who works in a coal mine earns \$300 a year, and perhaps more. Much of this goes for food,

* Some of these variations are, of course, attributable to the extent of the crop. The yield of wheat in the West in this year was larger than in any since 1839.

† Offers have been made to transport coal to France at little more than the ordinary freight from Philadelphia to Boston.

and all of it goes in payment for things that are the product of the earth, for every man is a consumer to the full extent of his production. Ten thousand miners and labourers are customers for those products to the extent of \$3,000,000. Forty thousand mechanics, miners, and labourers, are customers to the farmer and planter to the extent of \$12,000,000, which is far more than we can expect to export in future years. We now import annually above a quarter of a million of people, and there are half a million of our own home-grown population annually attaining maturity. By deducting from agriculture 20,000 working-men we diminish the number of producers, and by employing these 20,000 in other pursuits we increase the number of consumers to such an extent as to prevent the existence of the surplus of which we now complain. Judging, however, from the past, the adoption of protection as a permanent system would result in the increase of immigration to a vast amount, and of these a large proportion would gladly remain consumers of food, whereas under the present system they are compelled to become producers of food.

When farmers have a demand at home for all they raise, they obtain a higher price than when they have to go abroad. In the one case, they obtain nearly as much *more* than the price in distant markets as the cost of transportation *from* those markets, whereas, when they have to go abroad, they obtain as much *less* than the price in those markets as the cost of transportation *to* those markets, *and the price of the whole is regulated by that which can be obtained for the trivial surplus.* Grain and flour have for several years been higher in the coal region of Pennsylvania than in Philadelphia, because the demand has been always in excess of the supply. Close the mines, and the farmers will have to send their products to Philadelphia, receiving therefor the city prices, *minus* the cost of transportation. At the present time, the price of grain throughout the Union is maintained wholly by the domestic market, for flour sells in Liverpool at less than the price in New York. Close the mines and factories, and convert miners and mechanics into farmers, and the price at home must be the Liverpool one, which will then be *lower* than at present, *minus* the cost of transportation, which will then be *higher* than at present.

Admitting, however, that we are to have at all future times, a surplus of grain for export, the next question would be—What is the course that will secure to the farmer the highest price in foreign markets? The answer must assuredly be, that it will be that which tends most to diminish the quantity to be sent to those markets from this or other countries. If, then, the present system of the commerce of the world tends to increase the supply, it must be adverse to the interests of the farmer. That such is the case can, I think, readily be shown.

We know that the more miners and mechanics we have, the more food we consume; and that the more agriculturists we have, the more food we produce. Such, then, must be the case with other countries. We know that under the protective system miners and mechanics increase in number, and that under the free-trade system the producers of food increase in number. Such, then, must be the case with other countries. It is obviously, then, to our interest that Russia and Germany should consume more food and export less, and that if they and we should do so, the price of food would rise. Russia and Germany, and we ourselves, have established the protective system, and the result has been to increase the consumers and diminish the producers; and if all the world could follow our example, the supply of food now pouring into "the great grain market of the world" would be so far diminished that the price would rise. This, however, is

but one of the effects that would result from a general determination to put down the colonial system.

We have seen that the consumption of cotton in other countries is small, while here it is large. The price has already fallen so low that the planters are resorting to the cultivation of wheat, a measure that must tend to the injury of the farmer. Now, if we were consuming one half more cotton than at present, this state of things could not exist. The price obtainable by the planter would then be sufficiently high to prevent the necessity of abandoning its culture. Let us now suppose that Canada, and Russia, and Germany, and Ireland, could make a market for their now surplus labour, and thereby enable themselves to consume two or three pounds of cotton, where now they consume but one, and to consume more food than now they do—is it not obvious that the prices of food and cotton would both rise? That such would be the result of the abolition of the colonial system, as regards these countries, appears perfectly certain. If so, then the maintenance and extension of the protective system, with special reference to the entire abolition of that unnatural one which Great Britain has established, appears to me to be, most certainly, to the interest of the farmers as well as of the planters of the Union, and of the world.

Let us next examine the working of the system in Canada, in which there being, almost literally, no manufactures of any kind, there is no market on the land for the products of the land.

Freedom of trade is, there, perfect: that is to say, the people of Great Britain enjoy a *complete monopoly* of the machinery by aid of which alone the lumber and food of the people of Canada can be converted into cloth and iron. The consequence is, that the labour-cost of manufactured articles is so great that the consumption of them is small. The whole export of cotton cloth from Great Britain to her North American possessions, in the seven years, 1840–46, averaged twenty millions of yards, fine and coarse, and if the whole were there consumed, it would give but ten yards per head, or about two and a half pounds of cotton to each individual; whereas the consumption of the Union averages thirteen pounds per head, and is far more than that in the States nearest to Canada. If, now, we desire to know why it is that consumption is less on the one side of the line than on the other, the reason may be found in the fact, that the Canadian gives much more labour for his cloth and his iron than the American. Even his wheat is less in price; and if so, how must it be with those bulky commodities that will not bear transportation? He must, in the words of Sir Francis Head, “eat all he raises,” for he has not made, nor can he make a market on the land for the products of the land.

To the Canadians it is perfectly obvious that the price of food with us is maintained by the demand for home consumption, and therefore it is that there exists so universal a desire for the abolition of all restriction in the importation of their productions into the Union. They have perfect freedom of trade with “the great grain market of the world,” and by it they are ruined. They desire intercourse with the great grain-producers of the world, and to obtain it they would gladly sacrifice their intercourse with England, taking production in lieu of free trade, and becoming members of the Union.

Were Canada within the Union, her consumption of cotton would rise to a level with our own, for she would at once commence to make iron and cloth at home, producing thereby a demand for labour that is now being wasted. Instead of being a customer to the planter to the extent of two and a half pounds per head, every Canadian would take a dozen pounds; and thus would fifteen millions of pounds be added to the consumption, to the infinite advantage of the planter. The farmer of Illinois might then safely admit of free trade with

his Canadian neighbours, because with increased home consumption they would experience less necessity for going abroad to find that market for their products which the colonial system now denies to them at home. The farmer who believes in the advantage of free trade with England, should give his vote for the free admission of Canadian wheat, raised by men who consume cloth and iron made by men who eat the wheat of Poland and Russia. The farmer who sees that the price of wheat is maintained by the home demand, will be cautious of the admission of foreign wheat, duty free, until, by means of annexation, the farmer of Canada shall obtain the same protection that he himself enjoys, and thereby be enabled to make a market on the land for the products of the land.

Having thus examined the effects of protection, let us now look to what would be the effects of the adoption of perfect freedom of trade, as urged upon the world by England. It could not fail to be that of *rivetting upon the world the existing monopoly of machinery for the conversion of the products of the farm and the plantation into cloth and iron*, closing the factories and furnaces of Russia, Germany, and the United States, and compelling the people who work in them to seek other modes of employment, and the only resource would be to endeavour to raise food. There would then be more food to sell; but who would buy it? We have already seen that the whole exports of Great Britain amount, after paying for the grain she now imports, to but \$4 32 per head, and that, small as it is, it tends to diminish. With that she has to pay for her sugar, tea, coffee, cotton, wool, lumber, and all other foreign articles required for her own consumption, leaving her no power to pay for more grain. Nevertheless it would be poured into her markets, and the consequence would be that she would obtain three bushels where now she has but one, precisely as we have seen to be the case with cotton. "Mark Lane governs the world's grain prices," and as the price obtainable for the surplus would fix that of the crop, the result would be, that the farmers would everywhere be ruined, and this with no benefit to the manufacturers of England, for her farmers would likewise be ruined, and her agricultural labourers would be discharged, as is now the case with Ireland, whose population, deprived of employment at home, swarms to England, and destroys the power of the English labourer to obtain food, even at its present low prices—and the lower they fall, the less must be the demand for labour, and the less the power to obtain wages.

The proverb says, "put not too many eggs in one basket." The object of the British system is, and has always been, that of compelling the world to put all the eggs in the same basket; and the natural result is the occurrence of perpetual convulsions, producing devastation and ruin throughout the world, whenever her artificial system becomes deranged. A review of her operations, during the past thirty years, shows her, at every interval of four or six years, holding out to the world the strongest inducements to send her all they could spare of sugar, and coffee, and cotton, and agricultural produce of every description. About the close of the second year of this movement, when the machinery of importation had got into full operation, a change is seen to have "come over the face of the dream," and the whole energies of the country to have been directed to breaking down prices, with a view to compel exportation. The farmers and planters whom she so recently courted are now ruined. Their agents are selected as the first victims, and if the result be bankruptcy, public or private, it is followed by vituperation of the foulest kind; and thus is insult added to injury. The people of Pennsylvania and Maryland, Indiana and Illinois, Michigan and Mississippi, have had to endure all this, the result of the working of the Compromise tariff of 1833. In 1846, the whole world was urged to send food at any price.

In 1847, the whole object was to depress prices. Rice was sold for the mere freight and charges. Large shipments of corn brought the shippers in debt for the payment of those expenses. The fever and the chill having passed away, there is next seen to succeed a period of languor: then one of moderate activity, such as is now beginning to make its appearance. Next, speculation, excitement, and large imports, to be followed by the ruin of all around, in the effort to save herself. At the present moment, she takes certificates of debt in payment for iron, as was the case ten years since; but the day is not far distant when these certificates will have to be redeemed with gold.

Were it proposed to the people of the Union to make New York or Pennsylvania the deposit for all the products of the Union that required to be converted or exchanged, the absurdity of the idea would be obvious to every one. The wheat-grower of Michigan would find himself entirely at a loss to know why he should exchange with the neighbouring wool-grower by way of New York; and the cotton-grower of South Carolina would be equally at a loss to see the benefit of a system that should compel him to exchange with the wheat-grower of Virginia, through the medium of Philadelphia or Pittsburgh; yet such is precisely the object of the colonial system. The wheat of Michigan travels to Liverpool with the wool of Michigan, and the exchanges between the wheat-grower and the wool-grower are effected through the market of Leeds, three-fourths of the wool and the wheat being lost off the road. The rice of South Carolina goes to Manchester in company with the cotton of South Carolina; and the corn and the cotton of Tennessee cross the ocean together; and this long journey is performed under the idea that the planter can obtain more cloth for his rice, or the farmer more iron for his corn, by this circuitous mode of exchange than he would do if the exchanges were made on the spot. There are many who doubt the truth of this, yet all English politico-economical writers assure us that such is the fact; and every measure now adopted by the British Government is directed towards the maintenance of the *monopoly of machinery*, by aid of which the people of the world have been compelled to make their exchanges in her factories.

If such a course would, under any circumstances, be absurd, how much more absurd is it in a case like the one under consideration, where the power of purchase is so small, and so little capable of increase. Whatever goes to England must be there consumed, unless it can be forced off by means of low prices; and for what she consumes, be it much or little, she has \$4.32 per head of her population to distribute, in the form of cloth and iron, among the farmers and planters of the world. It is a Procrustean bed, and the misfortune of the poor farmers and planters is, that whatever she cuts off from the portion sent to her is, as a consequence of the system, cut off from all the crop.

The producers of the world have been, and they are now being, sacrificed to the exchangers of the world; and therefore it is that agriculture makes so little progress, and that the cultivators of the earth, producers of all we consume, are so universally poor, and so generally uninstructed as to their true interests. The day, however, cannot be far distant when our farmers and planters, at least, will be satisfied that their interests cannot be promoted by a system that separates the consumers from the producers, and renders cloth and iron so costly as to cause the average amount of the consumption of either to be utterly insignificant.

The object of protection is that of diminishing the distance and the waste between the producer and the consumer; thereby enabling the producer to grow rich, and to become a large consumer of cloth and iron. That it did produce that effect is obvious from the immense increase in the consumption of both in the period between 1843 and 1847. That the facility of obtaining

iron enabled the farmer to improve his mode of production and obtain large returns is obvious from the fact that the supply of food increased so rapidly. That the free-trade system produces the reverse effect, is obvious from the great reduction in the consumption of iron in the years 1842 and 1843, and from the reduction now going on; the whole consumption of this year not equalling that of 1847, notwithstanding the vast increase of population.

The producers of food throughout the world have one common interest, and that is to be promoted by the abolition of the existing *monopoly system*, which tends to destroy themselves and their customers.

The farmer is also a *producer of wool*, and therefore I will briefly allude to that interest.

If we desire evidence of the truth of what has been said in relation to food, it may be found in the condition of the wool market for several years past. Our production is less than our ordinary consumption, and the consequence is, that the price is *higher* than in any country of the world, by the whole amount of the cost of transportation.* Close the woollen mills, and the price must fall to the level of the markets of Europe, *minus* the cost of exportation. The increased supply then would, as a matter of course, produce a fall of prices, and then the sheep grower would be ruined.

The changes of policy of the last twenty years have several times ruined the woollen manufacturers, and the sheep growers have as often exterminated their flocks; the consequence of which is, that we have less than 30,000,000, when, if the policy adopted in 1828 had been maintained, we should now have 100,000,000, and a market for their whole products at higher prices than now; for the prosperous labourers, miners and mechanics, cotton-growers and food-growers, would then consume six pounds where now they consume but three, and the number of our population would be greater by 7,000,000 than at present. The discord that now exists is the result of the "war upon the labour and capital of the world" maintained by England, and when peace shall have been restored by the abolition of the monopoly, it will be found that, between the interests of the sheep-grower, the producer of food, the miner and the mechanic, there is perfect harmony.

[Although thoroughly impressed with the paramount importance to every landholder, of being well informed as to the nature and extent of his concern in the *tariff-policy of the country*, and well satisfied that all other influences, bearing on the agricultural condition of every nation, are comparatively unimportant, yet the fear that our readers, generally, may not yet fully go along with us in our estimate of that influence, restrains us from devoting to the subject as much of each number as we are fully persuaded we should be justified in doing—yet why should even those who have not yet realized our conception of its magnitude, or share our opinions, complain?—seeing that we still reserve a greater number of pages than most other agricultural journals give to practical subjects. The fact is, we did not intend to follow in the usual track of such journals, for it was too ably, and had been too long occupied already. We want to lead the landholder and land-tiller to see what is really the connection and bearing between his and other different industries, and how it is

* Much of the wool that was sent to Europe was returned, the price abroad being less than the price at home by more than the cost of transportation. Such will be the case with food, when the farmer shall make a market on the land for all the products of the land.

to the last degree interesting to him, that they should be as multiplied, as prosperous, and as near to him as possible; for therein, after all, lies the great secret and source of agricultural prosperity and improvement. We have yet in reserve, essays to show how protection affects the *cotton*, the *tobacco*, and the *sugar-planter*; the *land-owner*, the *manufacturer*, the *capitalist*, &c.—Ed. P. L. & A.]

AN ESSAY ON THE CONDITION OF A STALLION.

THE word *condition* is used by horsemen in a different sense from that in which it is understood as applied to cattle by the mass of farmers. By *condition* the farmer often means a high state of fatness; the horseman, on the contrary, makes use of the word to indicate the greatest health and strength produced by *reducing* all superfluous fat, bringing the mere flesh into clean, hard and powerful muscle, and invigorating the lungs and other internal organs, so that they may promptly discharge their respective functions, and suffer no damage from uncommon stress—the whole in order to the animal's performing labors and sustaining a continuance of action to which he would not be adequate without such especial preparation.

By the *Condition of a Stallion* is meant the state of the system in which the male horse should be kept, in order to deriving from him the greatest excellence in the progeny.

Too many persons are content to breed their mares to a horse whose figure suits them, without regard to his *condition*. The mention of one prominent instance alone will be sufficient to show that good condition is essential to the production of a valuable progeny. A remarkable case occurred in England some years since, in so high a quarter as to attract public attention, and consequently the fact of the account's obtaining currency without contradiction is a fair evidence of its correctness. The Prince of Wales, who afterward became George the Fourth, owned, and was in the habit of riding as a hunter, an entire horse of unequalled excellence. In consequence of this horse's superior qualities, His Royal Highness caused a few of his own mares to be bred to him in the spring, after he had been kept in the highest condition as a hunter throughout the winter, and the produce, on growing up, proved every way worthy of their sire. When His Royal Highness, as Prince Regent, became seriously engaged in the cares of Government, and therefore relinquished the pleasures of the chase, being desirous to perpetuate the fine qualities of this stock, he ordered the horse to be kept at Windsor for public covering, provided the mares should be of the first quality; and in order to insure a sufficient number of these, directed the head groom to keep him exclusively for such, and to make no charge, with the exception of the customary groom's-fee of half a guinea each. The groom, anxious to pocket as many half guineas as possible, published His Royal Highness's liberality, and vaunted the qualities of the horse, in order to persuade all he could to avail themselves of the benefit. The result was, the horse being kept without his accustomed exercise and in a state of repletion, and serving upward of a hundred mares yearly, that the stock, although tolerably promising in their early age, shot up into lank, weakly, awkward, leggy, good-for-nothing creatures, to the entire ruin of the horse's character as a sire—until some gentleman, aware of the cause, took pains to explain it, proving the correctness of their statements by reference to the first of the horse's get, produced under a proper system of breeding, and which were then in their prime, and among the best horses in England.

Almost every observing farmer in this country has remarked that whenever, within his knowledge, an ordinary work-horse has, by chance, covered a tolerably good mare, the foal thus produced has, at maturity, almost invariably become a better animal than it was expected to be, and in many cases proved quite superior to the get of the high-priced and highly pampered stallions of the neighborhood. What was the cause of this? Condition. The work-horse, by constant and severe exercise, was brought into health and strength, and his stock partook of the state of his system at the time of copulation. Why is it that many experienced farmers, after having tried the best stallions within their knowledge, frequently resort to the keeping of one of their own colts or farm-horses entire, for the service of their mares, and actually obtain as large and as good and salable stock from such a one, as that from the public stallions of far superior size, form, blood, and all other qualities, except this indispensable condition?

It may be stated that, generally, whenever the get of a stallion has proved, at maturity, to be of remarkable excellence comparatively with the sire, such horse has been, at and previously to the time of getting such valuable stock, kept without pampering, without excessive sexual service, and with a good share of exercise or labor.

To show the effect of a peculiar state of the system in the parents at the time of copulation, instances may be cited from various sources. We will content ourselves with two—and first take a lamentable case in the human species as given in the valuable work on “The Constitution of Man,” by George Combe:

“In the summer of 1827, the practitioner alluded to was called upon to visit professionally a young woman in the immediate neighborhood, who was safely delivered of a male child. As the parties appeared to be respectable, he made some inquiries regarding the absence of the child’s father, when the old woman told him that her daughter was still unmarried; that the child’s father belonged to a regiment in Ireland; that last autumn he had obtained leave of absence to visit his friends in this part of the country, and that, on the eve of his departure to join his regiment, an entertainment was given, at which her daughter attended. During the whole evening she and the soldier danced and sang together; when heated by the toddy and the dance, they left the cottage,

and after the lapse of an hour were found together in a glen, in a state of utter insensibility, from the effects of their former festivity; and the consequence of this interview was the birth of an idiot. He is now nearly six years of age, and his mother does not believe that he is able to recognize either herself or any other individual. He is quite incapable of making signs whereby his wants can be made known, with this exception, that when hungry he gives a wild shriek. This is a case upon which it would be painful to dwell, and I shall only remark that the parents are both intelligent, and that the fatal result cannot otherwise be accounted for than by the almost total prostration or eclipse of the intellect of both parties from intoxication.”

For another instance of a peculiar constitution derived from a parent at the time of copulation, and owing to a temporary excitement of the animal, a respectable farmer related to the writer of this Essay that he witnessed the effect of pain and nervous agitation on a stallion just before the moment of covering, in the production of a wild, timid, violent and worthless colt. The sire was in repute as one of the best horses ever kept in the district; and his stock afterward justified the opinion. The groom became angry and beat him in his stall in a cruel manner, and then led him out and allowed him to cover the mare, which was one of a perfectly quiet and orderly temper. The consequence was the production of an animal totally valueless, as above mentioned.

That the doctrine here held is no “new thing under the sun,” is evident from many venerated authors. Plutarch says “The advice which I am now about to give, is indeed no other than what hath been given by those who have undertaken this argument before me. You will ask me what is that? ’Tis this, that no man keep company with his wife for issue sake, but when he is sober—as not having before either drank any wine, or, at least, not to such a quantity as to distemper him; for they usually prove wine-bibbers and drunkards whose parents begot them when they were drunk: wherefore, Diogenes said to a stripling somewhat crack-brained and half-witted, ‘Surely, young man, thy father begot thee when he was drunk!’”

Shakspeare intimates the same belief in making a hero insult his enemies with the taunt

“For ye were got in fear.”

On no other known principle than this *condition*, or a peculiar state of the system at and before the time of copulation, can be explained the important fact which forms at once a criterion of skill in the scientific breeder, and a stumbling-block to the ignorant and unreasonable one, who would expect success without giving himself the trouble of investigating the natural laws which govern the subject of his operation: such a person is too apt to argue within himself that because the same parents at different times produce offspring of opposite characteristics, there can be no certain rules by which to create determinate qualities in the progeny; such a one would maintain that, because all the children of one married couple are usually somewhat different in characteristics from each other, there can be no means of predicting, with an approach to certainty, the qualities to be produced in the offspring by a particular sexual intercourse. Now this *law of condition* accounts for the difference between individuals produced at several births from the same parents. The case of twins, in the human species, serves to strengthen this argument, inasmuch as the two persons produced at one birth usually bear a close resemblance to each other, in all respects.

It is known that ideal impressions on the female parent, subsequent to conception, frequently take permanent effect on the offspring. That such causes do not usually give the leading characteristics to the progeny, is evident from these considerations:

1st. The consequences of such impressions on the female, are usually somewhat of an unnatural or monstrous order, being different from the traits of either parent, and from the common nature of the variety to which the animals belong.

2d. It is a settled point with breeders that the progeny is more strongly characterized by the traits of the male, than by those of the female parent. This fact is well known; and indeed it can hardly be expected otherwise than that the sex which bears so much the stronger impress of character, should impart the more visible resemblance to the offspring.

3d. It is an ascertained law of Nature, that peculiarities of climate, food, occupation and most other circumstances affecting the well-being of an animal, produce in its constitution a change such as is necessary for the welfare of the species; and that this proceeds throughout many generations, until the animal becomes completely adapted to the circumstances of its existence. [The same thing occurs in the vegetable kingdom.]

This last consideration, of the gradually altered state of an animal through successive generations, is a strong instance of the effect of *condition*; and it is by a regard to this invariable law of Nature, of self-adaptation to circumstances, that the cultivation or improvement of any breed is to be effected. "Hence the most acid and worthless grape is by skillful culture rendered sweet and luscious; flowers without attraction are gradually nurtured into beauty and fragrance; the cat may be made to present all the rich colors of the tortoise-shell, and the pigeon may be 'bred to a feather.'"

Let us now endeavor to deduce a useful, practical conclusion from the foregoing arguments. If our doctrine be correct, the horse-breeder will depend upon the *condition* of the stallion, in order to the procuring of valuable stock from him, as well as upon his other qualities of pedigree, speed, action, bottom, wind, temper, spirit, form, style, size, color, &c.

The next practical question is, how this condition is to be attained, and how the animal is to be kept at the required standard in this respect. The requisite *condition* is only to be attained by *training* for health and strength in a great measure according to the system of training for races: supplying an abundant nourishment of the best quality, allowing sufficient periods of repose for digestion, and giving regular and strong exercise, the whole with such variations as only experience and close observation, under constant practice, can dictate.

The aptitude of an animal to benefit by training is often inherited, like other qualities, from its parentage; and judicious breeding alone can insure a continuance of the desirable quality, or create a propensity for it by proper crossing, when it does not exist in the parents.

The age at which the horse is best adapted to undergo a course of training, is just at the close of his most rapid period of growth, while the system is in its

greatest freshness and vigor. This period is at about five years old. The powers of a horse will augment by suitable treatment in this respect until about the age of nine years: and, in order to obtaining the most valuable stock, a stallion should not be put to service before attaining a full development of his powers, nor kept at it after his form or energies appear to be affected for the worse. He should be, then, between five and fifteen years of age, if of an ordinary constitution; but if of remarkable energy and endurance, and exhibiting no symptom of debility, may be continued until past twenty.

Trainers find their endeavors to produce the highest state of strength, in an animal, greatly impeded by any excitement of the sexual appetite. It is then the more necessary to keep the horse in a state of training throughout the year, impressing most forcibly a tone of health and strength upon his system at the time when his nerves are liable to the least distraction; and continuing the course carefully throughout the season of copulation; never allowing such excess of service, or of the excitement of sexual appetite, as to induce a disturbance of spirit or temper, or a relapse from the most thoroughly strong, healthy and regular tone of the system. G. B.

Contrary to the system laid down by 'G. B.,' and which is urged with plausibility and force, the practice with too many is to keep the stallion through the season, as hogs are kept to carry them to the greatest possible weight in the shortest time, to which end it is deemed best to make them eat as much, and sleep as much as possible. Is it reasonable to expect a vigorous and sprightly offspring from an animal in that condition? The truth is that in the range of a farmer's occupations, there are few things that require more care and consideration and skill than in the department of *breeding his stock*. &c. Yet there are few in which less skill is possessed, or less consideration is exercised. For maintaining animals of various kinds, in their highest form and qualities of excellence, if the truth must be acknowledged, we have not among American husbandmen generally, the practiced judgment, the leisure, the conveniences, or the capital; neither have we the stimulus to close and persevering attention to be produced by the certainty of demand at remunerating prices. Hence the general deterioration which marks the descendants of choice imported animals—unless the Horse be an exception. To him our climate is particularly congenial, and improvement has been maintained by the high prices, still to be had from opulent men in the cities, for superior match horses. Another auspicious influence was that of the *turf*, but that declining almost to extinction, a corresponding effect will be visible after some years on the shape and powers of the Horse. We remember once, at the table of the British Ambassador, to have asked the late J. Randolph, of Roanoke, whether Virginia maintained her ancient superiority in the character of her horses; to which he answered, promptly, "No, Sir, far from it—far from it, Sir. Since we gave up horse-racing and turned up the whites of our eyes, our horses have sadly depreciated."

THE RHUBARB.—The leaf of the common garden rhubarb is a fine display of the order of vegetable nature. It is common to find them about two feet square, and containing over 500 square inches. We noticed a lover of Nature examining one a few days ago and making a calculation, the result of which, for its curiosity, we will give. He found that on the surface of the single leaf could be traced more than two miles of distinct canals through which the nourishment passed to give life and vigor to the leaf. These canals being about the sixteenth of an inch apart, divided the leaf into 130,000 fields, each as distinct to the eye as the division by walls of the grass and grain lands of the well cultivated farm. As lateral fibres, more minute than the unaided eye can discover, pass in close contiguity through these small fields, there is no doubt that could all the canals for circulation in a single leaf be extended in one line, they would reach the distance of ten miles.

We are glad to see that COL. CARROLL, of Maryland, has placed a stallion of the Black Hawk, Morgan breed, from Vermont, at Daughoregan Manor. The real Simon Pure Black Hawk, which we suppose to be the sire, is among the most perfect horses for "all work" that we have ever seen. But it may be hoped this one, too, will not be called "Black Hawk." By the bye—we claim to have been the first to insist, *a fortiori*, that the breed of Morgan horses, from their qualities, *must* be deep in the blood—and then to have traced that blood, and proved it, against the general persuasion—that it was a mysterious breed peculiar to Vermont.

STEAM-POWER FOR FARMERS.

THE EXTENDED APPLICATION OF THE STEAM-ENGINE, OR OTHER IMPELLING POWER OF THE THRESHING-MACHINE, TO FARM PURPOSES:

BEING EXTRACTS FROM AN ESSAY ON THIS SUBJECT,* BY ROBT. RITCHIE, F. R. S. S. A. & C.

Civil Engineer, Edinburgh.....Premium, Ten Sovereigns.

THE rapid advancement which Great Britain has made by the influence of her steam-power and machinery in manufactures, commerce, and navigation, has not been without a corresponding effect, though perhaps not to the same extent, in Agriculture. The proof of this is visible in the strenuous exertions made by agriculturists, of late years, to avail themselves of the use of machinery and improved implements of husbandry to economize labor. With the power of the steam-engine at command—although not now, perhaps, to the extent it may ultimately be made available—the British farmer has it in his power, at a moderate expense, on almost every farm, to lessen the labor of the barn, to extend its application to various useful purposes, and to place farm economics in a position of advancement which they have not hitherto attained. . .

By far the greater portion of the threshing-mills erected in the agricultural districts of Scotland are propelled by horse-power; but however convenient the use of the horse-walk and fixed threshing-machine was to the farmer, and justly considered, when introduced, as a great improvement in barn operations, and is yet esteemed so, still it has not been without its inconveniences; but when contrasted with the laborious employment of the flail, yet so generally in use throughout the world, its greater expedition and efficiency become apparent; and, when we consider that the use of the flail was better than the feet of animals, we may be enabled to form some idea of the value of the horse-mill to farm purposes. Still, of later years, the intelligent farmer has hailed, with much satisfaction, the application of a new impelling power to the threshing-machine—a power whose dominion extends over every branch of the arts and manufactures of our country—which has given an impulse to modern nations, a command over the produce of every climate, and of which the most learned nations of antiquity never could surmise.

The application of steam-power to farm purposes seems by far the most important improvement which has been made, connected with Agriculture, in these times, and must, from its obvious advantages, soon supersede every other power, except, perhaps, in a few isolated situations, where an ample water-power can be obtained, or where the smallness of the farms make it unimportant.

It is a good many years since steam-power was first applied to farms in Scotland, and, in the borders of England, in some few instances,

from twenty to perhaps thirty years; but it is only within the last ten or fifteen years that it has become general, if it can even be said to be yet in general use.

The advantages of the steam-engine over wind, as the impelling power to the threshing-machine, appear to be, that it is always at command, and ready to perform the work required by day or night. Its advantages over water-power are, that neither heat can dry it up nor cold freeze it. Its advantages over horse-power are, that the motion is more regular and the work must be better done; for horses, in the threshing-mill, generally pull unequally, while the strain upon the limbs, in this severe work, proves injurious to them. When the farmer, too, has always his horses fresh and ready for the field, he can do more work with fewer horses;* and if a pair or more can be saved, it is an important item to him.

One manifest advantage of steam, as the first mover of machinery, arises from its rapidity and certainty. If the farmer, therefore, can bring his grain on the shortest notice into market—if he can either thresh one stack or a dozen without stoppage, and so avail himself of any sudden rise in the market, without delaying or retarding the other operations of the farm—he possesses advantages invaluable, though no other were attained—advantages which no other means of threshing can give him. But steam-power likewise possesses that steadiness of action which cannot be obtained while employing the horse, and a much greater quantity of corn can be threshed in a day. The usual quantity of corn threshed by a six-horse steam-power, is at the rate of five quarters per hour, but four quarters may be taken as the general quantity to thresh easily; however, the quantity must vary according to the grain and straw. If the average of horse-power, as generally driven, be taken at thirty quarters per diem, the average of steam-power may be taken at fifty quarters, giving an advantage of twenty quarters in favor of steam-power, while the latter is kept up at no other expense, save fuel of the cheapest description—culm or dross is generally used—and, unlike the horse, when not working, *costs nothing!* hence, in every point of view, the use of steam-power on farms must prove advantageous.

The author of the excellent Treatise on Agriculture in the last edition of the *Encyclopædia Britannica*, seems to have fallen into an error when he says, “Wind and steam-power require too much expense for most farms, and that the use of steam must be confined for the most part to coal districts.” From the recent

* The author, by permission of the Directors of the Society, intends shortly to publish this Essay entire, with drawings fully explanatory of the different kinds of engines used on farms, mode of attachment to old mills, and connected with subordinate machines; with a historical sketch.

* The saving of a pair of horses to the farmer has been estimated at fully £100 per annum. Some farmers tell me, who have steam-power, that they can save a pair of horses out of four, on large farms.

date this article has been published, this opinion might not have been expected, if referring to the agricultural districts of Scotland. It may be presumed, therefore, the opinion has been inadvertently given, and if the author had entered more fully into the consideration of steam as a motive power, he would certainly not have classed it with wind-power. Indeed the rapid extension of steam-power to farms speaks volumes in its behalf. He would have found on investigation the immense benefit of the application of the steam-engine at a *very moderate expense to the farm*. A power which only requires to be understood to be more appreciated, and what almost every farmer who has used it has found to be one of the most advantageous improvements he has made on his farm-stead; and, while it increased his comfort, it was attended with no difficulty in the management, requiring no other attention than what any farm servant could easily give.

This power indeed, as applied to Agriculture, is yet in infancy; but with a prospect of gigantic manhood before it, it seems fitted in all probability, as it becomes more extended in its range of application, to change the entire face of the country, and give the same impetus to Agriculture, which it has done to all branches of the Arts. No well-informed farmer should be insensible to the value and utility of the steam-engine, even limited as it now is as a moving power to the threshing-machine, and the adoption of this power by him, in most instances, in the best agricultural districts of Scotland and borders of England, evince beyond a doubt, that it, in his opinion, is the best and most advantageous power which has been yet applied, wherever there are not insuperable obstacles intervening; and it shows how readily the enterprising farmer avails himself of whatever improvement enables him to support competition and improve the capabilities of his farm.

In England, *fixed* threshing-machines have not been much used for farm-steads, hence stationary steam-power mills are rarely to be met with. This may arise from a variety of causes without the value of these being overlooked by the various public-spirited agricultural associations scattered over the south. It cannot, however, be supposed, as its advantages become better known and understood, that the application of steam-power to farms, both in England and Ireland, will not in time become as common as in Scotland, where it has extended with amazing rapidity.* The threshing of grain with machines in England is generally carried on with portable mills wrought by horses; the threshing of grain being in some counties a regular branch of trade, the thresher removing his machine from farm to farm. Recently, steam-power has been strongly recommended at agricultural meetings (at the late show at Derby and other parts) for this purpose, and is now getting into use. The Disc Engine Company of Birmingham have invented a very compact portable engine, boiler, and threshing-machine, on a carriage. The whole machine provides for its being readily moved to different farms. Mr. A. Deans of Birmingham has also made, for a similar purpose, several forms of portable cylinder and piston engines, some with upright and some with horizontal cylinders. These engines are of different powers, from four to six horses', and

the engine is placed on a neat iron carriage.—The whole occupying very little room, requiring no chimney-stalk or brickwork, and is drawn from place to place by one or two horses. It may be worked, he states, in the field or anywhere, without any fixing, for threshing corn, cutting chaff, and other agricultural purposes.—Mr. Deans' inventions are clever, and many of them will be found useful. His portable steam-engine, with patent irrigator and fire-engine combined, adapted at the same time for driving threshing-machines, pumping and draining, is deserving of the attention of the farmer. These applications are all very suitable for small farms, and dispense with the laborious employment of the flail. But the advantages of a fixed threshing-machine, and steady and cheap motive power, under the command of the farmer at all times, are so palpably apparent, that the only wonder can be how the farmer of land, to any reasonable extent, can do without it, as the want of it must place him under many disadvantages.

In the following remarks, respecting the subordinate purposes to which the prime or impelling power can be advantageously extended at the farm, the observations shall be confined to steam-power, although it will be easily understood that many additional uses to which this power can be applied may equally well suit any impelling agent of machinery in which there is a surplus power.

Before entering on this subject, it may be proper shortly to describe the form generally adopted, and give an example.†

In most of the new onsteads, where steam-power is used, the engine-house is generally an outshot from the barn. The boiler of the steam-engine is supplied from a well sunk at one side of the engine-room. This is the general plan with stationary farm-engines, and the back or surplus water from the boiler is returned to the well, the water being usually moderately heated before entering the boiler. But when well water cannot be obtained, which often happens in coal districts, a pipe is led to a cistern, from the nearest pond, from which the engine pumps the water directly into the boiler; or the engine may be made to pump the water from the pond at a moderate distance; but this is just taking so much power from the engine itself. It is desirable always that the pump throws up an ample supply of water, when high-pressure engines are used, to prevent, from negligence, the risk of overheating and burning the sides of the boiler; of course, with condensing engines, a much more abundant supply of water is indispensably necessary: hence the non-condensing engine has been in many cases adopted, from the smaller quantity of water it requires. The engine, about seven horse-power, is on the non-condensing principle, with over-head crank; and the attachment of the power to the mill is extremely simple. The threshing-mill itself possesses every modern improvement. There are elevators to lift the grain to the hand-fanners, and elevators to repress the refuse through the mill; both of which are likewise worked by the engine-power; likewise a corn and bean bruiser, which admits of being attached or detached at pleasure. The steam-engine has been several years in use,

* The Report on the Advantages of Steam as a Motive Power on Roads, by the House of Commons, is strangely coincident in the same reasoning.

† In the following remarks it is barely possible to be intelligible without sketches of the drawings which accompanied this Essay, except by those who are conversant with Scotch farm-steads; but as the paper and drawings will be subsequently published, reference can be made to the book.

and is most perfect of its kind, (it was made under my own direction,) and is capable of driving easily the threshing-machine and machinery connected with it, and also any additional machines which the farmer may find for his advantage to attach to it.

Another example is given, showing the connection of the steam-engine with a very complete set of farm-offices. This is entirely new, and would easily admit of subordinate machinery, if desired. This steam-engine is also of high-pressure or non-condensing, excellent of its class, and capable as it ought to be, of doing more than the work required of it. The neatest arrangement, however, of the steam-engine house and boiler, is when these buildings form a part of the range itself of the farm-buildings, and not an outshot from it.

But, in truth, there is no end to the different plans which could be adopted by a skillful farm-architect or farm-engineer; and it may be said every farmstead requires a separate design to suit the locality and wants of the farmer. There are no parts of Scotland where so many snug, compact farm-buildings can be seen as in the neighborhood of Edinburgh, the accommodation is ample, without being superfluous. So rapid, indeed, has been the extension of steam-power to farms in this vicinity, that from the fine elevations round Edinburgh, more than 100 steam-engine stalks or chimneys may be observed as the landmarks of the farm, and giving a peculiar feature to the landscape.

Although the subordinate purposes to which the impelling powers of the threshing-machine have as yet been extremely limited, yet it admits of no doubt, if under proper control, it may be applied to a variety of useful purposes to which it has not as yet been applied, beside that of threshing grain. It is, therefore, of importance to consider the most simple and economical way in which the subordinate machines can be connected with the impelling power.

To the bruising of grain the power is commonly applied, and that most advantageously to the farmer. It has also been applied to chopping of hay, slicing of turnips, grinding of rape-cake, working a butter-churn, and driving circular saws; to these, and perhaps many other purposes, the first power has already been at different farms applied. An inconvenience however, arises—although, perhaps, of no very great importance—when the smaller machines are used, that they cannot be driven except when the threshing-mill shaft is set in motion, as the axle or shaft of the steam-engine connects the first power with the mill, and, if worked with belts, from a separate shaft; this latter shaft cannot be set in motion until the main engine-shaft, which connects engine and threshing machine, is going. When subordinate machines are used, worked by steam power, they should be so contrived that the mill* may either be worked at the same time, or taken out of gear, and the machines worked or driven independently of the mill. This may be attended, perhaps, with more expense in the first erection, but it is more complete, and will, on most occasions when used, save a loss of much steam.

Several examples might be adduced in explanation of these points. At one of the first steam-powers, for a large farm, put up in West Lothian, the steam-engine can either drive the thresh-

ing-mill in conjunction with grinding-mills for meal and flour, or the latter can be used by themselves. The machinery can be detached or taken out of gear at pleasure, and the whole is of the most perfect description. In such a case as this, the steam-power must be ample, which it is in the instance alluded to.

In another example of a simple description, in Mid-Lothian, an engine of eight-horse power, non-condensing, is regularly in use for a saw-mill, while, at the same time, it is the motive-power of the threshing-machine. The force is communicated to the saw-mill by means of a large cogged wheel placed on the main shaft, between the fly-wheel and engine itself, driving two circular saws. The power is taken from, or given to, either threshing-machine or saw-mill at pleasure, by means of pinions or small wheels. Cut wood is manufactured here to a considerable extent, which shows how easily the steam-power can be advantageously employed, and to do also the work of the threshing-machine.

It would be tedious to go over the various skillful applications which have already been made use of by enterprising farmers in the agricultural counties round Edinburgh. The subject is *new*, and, perhaps, but in infancy. Of course a great deal remains to be done by skill and ingenuity before such plans are extensively adopted; but I have little doubt as the value of steam, as before stated, becomes fully known, as the *BEST PROPELLING POWER FOR THE FARMER*, endless may be the applications of it even to farm purposes.

One of the best examples I have yet met with of the acknowledged utility of subordinate machines worked or driven by the first power, is at a fine farm in East Lothian. The steam-engine which drives the threshing-machine is a neat condensing-engine, but only of six-horse power. In addition to working elevators and dressing fanners connected with a complete threshing-machine, a shaft or axle—taking the power directly from the main-shaft of the mill—is led through the barn, which, by means of drums and belts, is made to work a corn-bruiser, barley-hummeler, and fanners, and likewise a pair of stones for a flour-mill, and a mill for grinding rape-cake; and, by an additional shaft, a circular saw. The whole of the machines are so arranged that they can be driven alternately, and the flour stones are let off to a neighboring miller, thus proving the economy of the arrangement. In addition to these machines, the spare steam from the boiler is made to heat a *drying-loft*, which is placed over the boiler-shed, on the floor of which small tin or iron pipes are laid, heated by steam from the boiler. These pipes are protected by a grating of wood, and the whole covered with hair-cloth. Damp grain is here dried with the greatest facility; and in wet seasons the drying-closet or room is found to be of great utility.

Indeed, the whole arrangement at the farm displays much skill and ingenuity; and we could not have a better example of a *small power* with which so many subordinate machines can be usefully employed without great trouble or expense.

I might give several more illustrations from *other farms* where great ingenuity has been displayed in economizing labor by machinery; but I think it unnecessary, as the one I have given is among the best instances I have met with where the advantages of such means were

* The word mill is used indiscriminately for threshing-machine.

duly appreciated and early adopted. However, it may be said that, in general, the impelling power is *strictly confined* to driving the threshing-machine and connections of it. Indeed, unless the steam-engine has ample power, it would be useless attempting to work more than the mill at one time; but we see, if the power is judiciously arranged, that even a steam-engine of *only* six-horse power can be made of powerful avail to the farmer.

It seems singular that the farmer of the present day does not turn more attention to these useful applications of ingenuity so advantageous to himself, of which I have given so striking an example; for, when we turn to the century that is past, which we are so apt to deride for its want of mechanical contrivances, and think so much behind the present age, we shall find much to admire if we have the patience to investigate. If we turn to the works of Dr. Stephen Hales, F. R. S., and other writers, farmers will find much curious and useful information. His plan of keeping corn sweet in sacks was considered of great benefit to farmers. A hollow reed or cane, perforated with 200 holes, was placed in the sack, and the nose of a common kitchen bellows placed into a wooden faucet attached to a leathern pipe ten inches long, distended by a spiral wire fixed to the top of the stick. Each stroke of the bellows would discharge a quart of air, sixty-four strokes per minute would convey a quantity of air equal to the capacity of a four-bushel sack. With the steam-power at command at the farm to drive a blowing-fan, such a scheme as this could be easily adopted by the farmer, and still exceed the plan of preserving corn by ventilation, which was much thought of at the time, although ventilators of a much simpler construction can now be readily applied for the purpose. It is stated (in the *Gentlemen's Magazine*, 1749) that the ventilators contrived by Dr. Hales for preserving corn were so much esteemed in France that M. de Humel de Monceau, a Member of the Royal Academy of Sciences, preserved a large heap of corn free from weevils for two years, without turning it, merely by *blowing air up through it*. He likewise procured a large granary to preserve, in the same manner, with ventilators worked by a wind-mill, quantities of corn, with a view of making it a general practice in France. Dr. Hales also applied his ventilators very usefully for sweetening milk when ill-tasted, also for water, by blowing showers of air through it. His ventilators in dairies would be found advantageous. If such was the knowledge of these matters in the last century, it seems singular how little has been really done to follow out the experience they acquired; yet it is not the less curious to observe the coincidence that so often happens between past and present inventions; for the plan I have described, as applied for drying grain in East Lothian, is a counterpart of the very plan recommended by Dr. Hales for drying malt, hops, &c. only the latter had the advantage in recommending blowing fresh air upward through wooden bars, "*or large laths, nailed to the floor, and hair-cloth to be laid on them.*"

While, therefore, improving the present inventions, do not let us overlook the past, and claim, as new ideas and inventions, what may have been known and applied centuries before. Let the information and appliances of the past be acknowledged as so much experience gained, and incorporated with the superior advantages

in mechanical construction of the present times.

In applying the steam-engine power to subordinate purposes, and mixed machinery at new farm offices, there is more scope for the exercise of skill and judicious arrangement on the part of the farm-architect and engineer than when steam is made use of at old farm buildings. The method of connecting the first power to the machines, likewise admits of difference of opinion. It is sometimes done by belts and sometimes by cogged and beveled wheels. Although there is more friction by wheels, they are generally preferred by engineers, as belts are apt to slip, and cannot be durable, instances being found where in places in barns, or places infested with rats, they are even destroyed by these vermin. All main shafts or axles are invariably preferred to be connected with wheels, and likewise in connecting subsidiary or minor shafts to the first mover, wheels are made use of, although, in many instances, belts must be had recourse to, and, by having several shafts to lock and unlock to the main crank shaft, or to go easily in or out of gear, a variety of useful machines may be driven by steam-power at every farm at which steam is made use of.

At new farm buildings, in addition to driving the threshing-machine, the whole array of the minor implements or machines of the barn, and machines for preparing food for cattle and horses, machines for working the dairy utensils, machines for preparing artificial manures, machines for pumping or irrigation, by means of hose, machines for preparing grain for food, and machines for giving warmth and ventilation, might all be attainable, and easily made applicable at every farm, by means of steam-power.

Although such machinery may at first view appear *complicated*, yet in *reality it is not so*, and might be made of very easy management. I need not enter into any minute description of the methods of applying such subordinate machines as may be thus adopted. The details must be left to individual skill to execute. It is sufficient here that I suggest and point out the practicability of easily following out the suggestions made. With this view, the germ of such an arrangement of subordinate machines, applicable to the various purposes above noticed, I shall briefly describe.

A steam-engine of ample power (suppose six, or eight, or ten-horse power, for farms varying from 250 acres and upward) is erected, in the first instance, to drive the threshing-machine, and is supposed to be in daily use, as the *extended* application of steam-power *implies that the farmer will find it to his advantage to make use of the engine almost constantly*, or, at all events, in winter, to have the fire on the boiler. To be of real utility, the power must be generally available or at command, at least more frequently in use than *presently* done, where the engine and boiler remain a dead letter except when threshing is going forward; and where the refuse of coal or culm can be readily obtained, as in coal districts, there can be little apology wanted for not having the boiler regularly in use, which should be constructed on the most economical principles as regards fuel. The construction of the boiler is of most paramount importance in farm-engines, both as regards economy and safety. We have seen what has been done in locomotive engines, by industry and economy in fuel, shown fully in Mr. Macneil's evidence before the House of Commons in 1832. The evidence of Mr. Macneil in con-

vincing the Committee that experience will soon teach a better construction of the engines, and a less costly make, and generally a requisite supply of steam. When the steam-engine was not required for the purposes of the barn, it might, perhaps, in many farms, be advantageously employed for the purposes of pumping and irrigation. Supposing the engine, therefore, to be nearly in daily use, and having every modern improvement, and the threshing-machine of similarly improved construction, with elevators, hummels, corn and bean bruiser, &c. &c. By a direct shaft from the steam-engine, with the power of attaching or detaching, taking in or out of gear at pleasure, meal or flour mill stones are applied, these, if inconvenient, to be worked by the farmer, or, if the corn-mill divides his attention too much. I have given an example where the spare power of the engine was let off to a neighboring miller. In several instances, however, I have met with farmers who advantageously made use of flour, barley, or meal mills at their farms, and if not used for grinding, a pair of stones would be found of great advantage for bruising grain, and several have been applied for this purpose in the south of Scotland and in Northumberland, at large farms, as much more powerful than the common corn-bruising rollers. From the same shaft a rape-mill, an oil-cake crusher, or even a malt roller, could be easily applied, and a circular saw be driven, and, if thought requisite, a bone-mill could likewise be wrought by the same shaft, and in many farms found useful for "converting ashes, and a variety of otherwise useless rubbish, into fertilizers." Another shaft passing through the straw barn could easily work a straw and hay cutting machine, and also a turnip and potato slicer. The former could be conveniently placed in the stable court (at no great expense a hayloft might be made above the straw barn) and the latter could be placed very conveniently near the cattle court, at the turnip court, or, if preferred, the straw-cutter could be advantageously placed there, instead of the turnip slicer, as these are found so useful in the field.

Other minor machines could easily be driven from these two shafts as they pass through the respective barns—such as a butter churn for dairy purposes. I have not dwelt much on machinery for dairy purposes, because dairy farms, on a large scale, are rarely combined with grain farms. However, as every farmer is more or less connected with feeding cattle and making butter and cheese, it must be obvious that the command of steam-power gives many advantages, and points out how the female department of the household can be saved much useless labor, and their attention turned to more profitable purposes. Thus the labor of churning by the churning-machine worked by steam-power will enable a great deal more work to be done in much less time.

In addition to the machines I have noticed at the general farm, I may mention that a very simple contrivance might construct a *tram-way* and wagon to the threshing loft, by which the engine could be made to *draw up* the grain to supply the threshing-mill, and *return down* the empty wagon, saving much manual labor. Elevators for grain could also easily be constructed to *lift up the grain* to the granary, and lower it upon the carts, wrought by the steam-engine.

The above are a few out of many practicable purposes to which mechanical science may be

made to economize human labor, and render the exertions of the *farmer* more advantageous to himself. But a new element is mixed up with the applications of the steam-engine to farms, which, in another point of view, gives it still greater advantages, and these of a practical kind. I allude to the use *which can be made of the steam itself*.

A steaming apparatus is a necessary appendage to every farm of a moderate size, and its utility is very generally appreciated. The steam is commonly raised by a separate boiler, but very little skill would be required in applying the steam from the engine boiler to a complete steaming apparatus for cattle. The objections of the steam not being in constant use I have already alluded to. Where, indeed, the farmer is *resolved* merely to confine his steam-engine to threshing of grain, of course a portable steam-power would not apply—it would be inexpedient, perhaps, to draw steam from his engine boiler, or even put water for boiling turnips in wintering cattle. But the time will soon be past when the farmer will cease to be told, "What a pity it is you cannot make use of your steam-power, except merely for threshing, after going to so much expense for its erection—it is thus useless to you (keeping it idle) two-thirds of the year." As I have said, a test for the ingenuity of the farmer is to be shown, and he will be judged of as the cleverest and most practical farmer whose skill has brought out the most numerous and useful applications. Hence, in this light, steam-power is to be judged of not merely as a *motive power*—which water can as cheaply perform, or which, some day, electro-magnetism* may, perhaps, as cheaply effect—but as possessing advantages *per se*, which I shall attempt shortly to point out. The boiler of the engine, which ought to be no longer than really required to give *steam enough* to prevent waste of fuel in winter, must be daily regularly heated, and then either steam from it, or hot water, as may be required, is to be obtained for preparing food for cattle. It is likewise to be made equally available for stable use. The advantages of having hot water *at all times* in stables is appreciated by every gentleman who takes an interest in his stud.† The spare steam can be made easily to heat a complete range of cottages for farm servants, which may be situated in connection with the farm offices as not to be inconvenient.

We have already seen the facility by which the spare steam was made use of, at a very small expense, to heat a drying loft; even the heat of the boiler itself might be of utility for damp grain placed above the boiler shed, as is frequently done for drying-houses of manufacto-

* Although there is little prospect at present of electro-magnetism being brought into use in this country as a moving power of machinery, yet it is stated it has already been brought to considerable advancement on the Continent—and the very ingenious applications of this powerful agent by Mr. Daniels, and others, holds out a decided prospect of its more extended applications. A very clever model of a machine, driven by electro-magnetism, was shown at one of the Highland and Agricultural Society's monthly meetings, by Dr. Aiton of Dolphington, and an interesting account read by him of the application of electro-magnetism to machinery.

† In some stables the whole range of sleeping-lofts or apartments for the grooms were heated, under my directions, by hot-water pipes or steam; likewise water tanks, or cisterns for the stalls, were heated by hot pipes passing through them.

ries. The utility of this plan must not be overlooked in making arrangements for using steam-heat, nor likewise the simplicity by which the same agent could be applied for a clothes-drying house for family use. Nor must we forget the advantages of heating poultry-houses with spare steam-heat, or even the poussiniere, or nursery for egg-hatching. Nor is this chimerical—the poussiniere of M. Bonnemain, invented fifty years ago, heated by hot-water pipes, or steam, we are told, was found to be an ingenious and profitable establishment; and this plan, as old as the Egyptians, while it has been revived within these few years, affords to the busy housewife, where her spouse has laid out a few pounds on the erection of a steam-engine, or steam-mill as it is called, or boiler, an ample supply of heat for bringing chickens in winter into market, to reward her with a profitable investment. The above are merely a few things of the many this powerful agent can be made to do, even on a small scale; nor must I forget, for the housewife, the washing-machine, both *driven* by steam-power, and *supplied* with steam, and other excellent applications of steam, many of which will be found described (as they have been practically applied) in Silvester's Domestic Philosophy.

The great distance to which steam can be conveyed from the boiler would excite surprise to those who have never seen it; hence there could be no difficulty in applying it, in addition to what is stated, to many horticultural purposes—such as warming a hot-house and conservatory, and pine or melon pits, or even forcing land, or garden ground. The daily new inventions and purposes to which it is applied point out an inexhaustible field for extension.

But the utility of the steam-engine is not practically exhausted: the boiler chimney could be made of the greatest utility for an important purpose—*ventilation*—a thing so much neglected in most arrangements. The whole range of stables, cattle-sheds, and even piggery, grain lofts, &c. could be brought under a perfect system of ventilation by the fire draught, by means of metal or wooden pipes, or brick or stone flues, communicating with the ash-pit of the furnace—a plan which has been long known,* yet so little practically made available. The importance of ventilation to stables, though generally admitted, is frequently neglected. Although we have many examples on record, especially in horse-barracks in the army, of the evil consequences of bad ventilation—as all animals, when confined, rapidly destroy the atmosphere, both by respiration and secretitious exhalations from the skin—producing carbonic acid, and other ammoniacal and mephitic gases. Hence the lower animals require *even more air* in the same ratio than the human race; and, to keep horses, cattle, poultry, sheep, pigs and dogs in a healthy condition, and free from cutaneous diseases, when much confined, besides wholesome food, a constant renovation of the air should go on; and even in stables, if heat is required, which it must be, it is surely better to provide artificial heat, by passing a steam-pipe through the stable, than by enclosing the animals in a loose box heated by their own exhalations, or by closing the stable up, to allow them, as it is termed, to draw heat from one another. I do not think sufficient attention is ever paid, in the construction

of stables and cattle-houses, to the necessity of ample *light* as well as *air*. The effect of want of light on vegetables and plants is so well known that there can be no doubt light is equally required for the health of man and the lower animals. In addition to the stables, &c. the same range of cottages which I have shown could be so easily heated with spare steam, or hot water, from the engine-boiler—could, with equal effect, be ventilated by flues drawing or sucking out the impure air to the furnace—or if the fire draught was found inconvenient, or thought objectionable, as has been said, for “attenuating the air,” then the wind fan could be driven by the steam-engine, to effect the same purpose. In all and every case to which ventilation is applied, whether to suck out the impure air from cottage or stable, provision is to be made for the inlet of fresh air, as well as the escape of impure air. Thus, with a little expense in the first arrangement, farm-house, cottages and offices could be placed under a thorough system of ventilation—under perfect control; and the same agent which effected this would supply, without more cost for fuel, an ample supply of heat to warm with salubrity many cottages; even ample supplies of warm air, if preferred, heated by steam, might be distributed, thereby increasing the comfort of the cottage fire or the farmer's hall.

In addition to all this, an agent so accessible as the engine chimney might be applied to other useful purposes—to preserve the roof and timbers of the buildings, as well as so contrived that a flue from each stack in the yard might create a circulation of air in wet weather, and prevent the heating of the grain in the stack.

I might pursue this subject still farther, but I am well aware that even much of what I have already suggested the farmer may be apt to regard as chimerical, and inconvenient for him to adopt in practice. This I am prepared to expect. But opposition of this kind goes for nothing. It is like the slow-sailing ship in the wide sea, which is soon distanced by more active competitors. When we remember the state of the Scottish farms of old, and contrast them with the improved state of modern tillage, and knowledge of chemical properties of soils and manures, we may observe what a few years have already produced, and what a prospect of progressive advancement is still held out. I agree with Mr. Babbage “that Science and Knowledge are subject, in extension and increase, to have effects quite opposite to those which regulate the material world: the farther we advance from the origin of our knowledge, the larger it becomes, and the greater power it bestows upon its cultivators to add new fields to its dominions. . . . The mind contemplates the past, and feels irresistibly convinced that the whole already gained bears a constantly diminishing ratio to that which is contained within the still more rapidly expanding horizon of our knowledge. . . . The experience of the past has stamped with the indelible character of truth the maxim that ‘*knowledge is power*.’”

(Journal of High. and Ag. Soc. of Scotland.)

BURNT CREAM.—*Prep.* Cream, 1 quart; casia, a small stick; the peel of half a lemon; boil for 5 minutes; let it cool a little and take out the spice; then add the yolks of 9 eggs, and sugar to sweeten: stir until cold, put it into a dish, strew powdered sugar over it, and bake it until brown.

* See an account of this, in a paper read by the writer before the Royal Society of Arts, 10th April, 1843; and printed in the Society's Transactions.

ON THE ART AND USEFULNESS OF BUDDING.

As no time is to be lost by those who propose to provide themselves with choice fruit of every sort by this beautiful process, we have decided to devote to it as much space as may be necessary to enable the most inexperienced to perform the operation.

The season most appropriate for it, according to English writers, extends to the last of August, but the best American authorities say that budding may be practiced in this country to the middle of September. The simple rule, however, is, that it may be done at any time that, and only when, the sap flows so freely as to admit of the bark being easily separated from the wood of the stock to which the bud is to be attached.

Budding, we need hardly say, is the art of making the bud unite to the stem or branch of another tree or shrub. Delicate kinds, says Johnson, are strengthened by being *worked*, as it is technically termed, upon more robust stocks.

A bud contains the rudiments of a plant, or of part of a plant, in a latent state, until season and circumstances favor its evolution. A close analogy exists between a bud and a bulb, which is also a reservoir of the vital powers of the plant, during the season when those powers are torpid. Buds consist of scales closely enveloping each other, and enfolding the embryo plant or branch. They resist cold only until they begin to grow; and hence it is, according to the nature and earliness or lateness of their buds, that plants differ in their powers of bearing a severe or variable climate. By buds, says Smith, as we well know, plants are propagated; and in that sense each bud is a separate being, or a young plant in itself; but such propagation is only the extension of an individual, and not a reproduction of a species, as by a seed. Accordingly, all plants increased by buds, cuttings, layers, or roots, retain precisely the peculiar qualities of the individual to which they owe their origin. If those qualities differ from what are common to the species, sufficient to constitute what is called a variety (as, for instance, the seckle pear, or black tartarian cherry, as distinguished from other pears or cherries), that variety will be perpetuated through all the progeny thus obtained. This fact, says the same writer, is exemplified in a thousand instances, and none more notorious than the different kinds of apples—all which, says he, are varieties of the common crab, *Pyrus Malus*; and he fully assents to the opinion of Mr. Knight, that each individual thus propagated, by buds, cuttings, layers, or roots, has only a determinate existence—in some cases longer, in some shorter—and to this cause he attributes the fact that many valuable varieties of apples and pears, known in former times, are now worn out, while others are dwindling away before our eyes. We have a distinct recollection of two or three kinds of apples, and one of pears, on our grandmother's estate in Calvert county, Maryland, all aromatic and delicious fruits, which we feel confident have become extinct. *Propagation by seeds* is therefore recommended by botanists and horticulturists of the most extensive inquiry and enlarged observation, as the only true reproduction of plants, by which new and valuable varieties may be obtained, each species kept distinct, and all variations effaced; for though, says the author we are quoting, new varieties may arise among a great variety of seedling plants,

it does not appear that such varieties owe their peculiarities to any that may have existed in the parent plants.

The object obtained by budding is an early and rapid multiplication of any particular kind of fruit; and though it is but too probable that many of our readers may not have provided themselves with nurseries of stocks to bud upon (as every one should do, considering that they may be raised as easily, though not quite so quickly, as corn or peas), still there are few but who may find about their grounds or orchards subjects on which they may at once bud choice apples, and pears, and peaches, and cherries, from choice kinds within their reach.

Johnson says that buds of almost every species succeed with most certainty if inserted in shoots of the same year's growth; but he says the small walnut buds succeed best which are taken from the base of the annual shoots, where these join the year-old wood of that from which the bud is taken. Buds, says he, are usually two years later in producing fruit than grafts. It is recommended, however, as a general rule, that buds be taken from the middle of the shoot, as those from its point are said to make wood too freely, and those from its base to be more unexcitable, and consequently less prompt to vegetate. So much quicker and more rapid is the process of budding than grafting, that, Mr. Downing says, a skillful budder, with a clever boy following him to tie the buds, is able to work from a thousand to twelve hundred nursery stocks in a day; and he adds, among other reasons for giving preference to budding over grafting all stone fruits especially, such as peaches, apricots, &c., that *they* require extra skill in grafting, whereas they are budded with great ease. According to the same high authority, the several fruit-trees come in season for budding in the following order:—Plums, cherries, apricots on plums, apricots, pears, apples, quinces, nectarines, and peaches. Before commencing, says Mr. Downing, you should provide yourself with a budding-knife, [Fig. 1,] about four and a half inches long, having a

Fig. 1.



rounded blade at one end—and an ivory handle, having a thin, rounded edge, called the *haft*, at the other. But let not any indolent reader excuse himself that there is no *exactly such knife* within his reach! True, every farmer of becoming pride will be provided with these small affairs, just as the true disciple of Izaak Walton will take care, before the season comes on, to have all his fishing tackle in apple-pie order: his bamboo, and, for lighter fishing, his white cane rod; his lines of silk, of hair, and of silk-worm gut, manufactured from the intestines of that wonderful insect—being, for its circumference, the strongest substance known to the angler. He will have his tip-capped float, and his cork float, and his plugged float; he will have his winch, his basket, his landing net, his naked hooks, and his flies—his May fly and his ant fly, his dun-red hackle and his candle fly. Say, ye spirits of old uncle Izaak, and of Cotton, and—no less known in his day and his sphere—of our old fellow angler, Col. Jack Thomas! what will he not have that a genuine angler should, that all may be O. K.? Yet we have seen a good mess of fish as ever was made into “Black Dan” chowder, taken at old Rock Hall, with a plain cedar angle and common twisted-cotton line. Why then should not the farmer of the true grit take care to have all *his* tackle, too,

in perfect order at a moment's warning?—his knife of peculiar make, as laid down by authority, for budding; and soft matting for wrapping; and suitable wax for binding up and healing the wounds of trees budded and grafted, or such as, having their limbs torn off by the wind, require the care of the surgeon?—Why should he not have always in perfect order his knives adapted also for butchering, and his fleams for bleeding, and his shears for shearing his flocks—just as a dentist or a surgeon has all his tools and instruments in perfect trim? Are farmers to be, in truth and for ever, what the world is prone enough to consider them—a poor, spiritless race of drudges, without any of that pride of profession, and *esprit du corps*, which animates the followers of other pursuits—the racer, the sportsman, the shipmaster, and the military man—to excel in their knowledge, and preparations, and appointments, and in their readiness to challenge public scrutiny and comparison, each in the *line of his calling*? But feelings of indignation are overcoming and running away with us, as usual, whenever we think of an *American farmer*, standing on *his own* freehold estate—the monarch of all he surveys—being content to drudge, and live on, from hand to mouth, without any of that forecast, neatness, or ambition of excellence and honorable distinction, without which he can hardly expect to reach, much less rise above, vulgar mediocrity, and the want of which always marks him a victim and a hobby, to be fleeced and ridden by misers and demagogues!

The manner of performing the operation of budding is thus described by the voluminous author whose life and writings were briefly memorialized in our June number. The method he recommends, and that which is in general use, and which long experience has proved to be best, is called "*T budding*," [fig. 2]—so called from the form of two cuts that are made in the bark of the stock to be budded—or "*shield budding*," as it is sometimes called, from the form of the piece of bark on which the bud is seated, [fig. 3,] being in the shape of a shield when it is prepared to be inserted within the T cut in the bark of the stock.—"*Scallop budding*" is also described by Loudon, and M. Thouin describes twenty-three modes, which we mention only to show the reader how much thought and ingenuity have been bestowed on an apparently small matter about which it may happen that he, a free born American republican landholder, in the pride of his position and circumstances, has never spent a thought. For every useful purpose it is deemed, however, sufficient to give the following directions for *shield budding*.

With the budding knife make a horizontal cut across the rind, quite through to the firm wood; from the middle of this cross or transverse cut make a slit perpendicularly downward, an inch or more long, going in this case also quite through the bark into the wood. This is done as shown in fig. 2. Proceed with all expedition to take off a bud, holding the cutting or scion, fig. 4, in one hand, with the thickest, or that which was the lower end, outward, and with the knife in the other hand, enter it about half an inch or more below a bud,

Fig. 2.



Fig. 3.



Fig. 4.



cutting nearly half way into the wood of the shoot, and then continuing it with one clean, slanting cut, about half an inch or more above the bud, so deep as to take off part of the wood along with it, the whole about an inch and a half long, as in fig. 3; afterward cutting off at *a* the leaf under which the bud is situated, leaving its foot-stalk attached to the bud, that by it you may hold it between your lips while with your budding-knife the lines are cut in the stock, where the bud is to be inserted, which should be at a place where the bark is smooth and free from any bruises or knots, and on the side rather from the sun. Then directly with the thumb and finger, or point of the knife, slip off (according to the English and European fashion,) the woody part remaining in the bud, which done, observe whether the germ or eye of the bud remains perfect; if not, and a little hole appears in that part, it is imperfect, or, as the gardeners express it, the bud has lost its root, and another must be prepared. Next, slip down the bud close between the wood and bark of the stock tree, to the bottom of the slit. The next operation is to cut off the top part of the shield or bark of the bud even with the horizontal first-made cut in the bark of the stock, so as to let it completely into its new residence, and to join the upper edge of the shield, with the cross or transverse cut, in the stock, that the descending sap of the stock may immediately enter the bark of the shield, and protrude granulated matter between it and the wood, so as to effect a living union between the bud and stock. The parts are now to be immediately bound round with a ligament of fresh bass, previously soaked in water, to render it pliable and tough, or, as Mr.

Fig. 5.



Downing says, with soft matting, to be tied firmly over the whole wound, commencing at the bottom, and leaving the bud and the foot-stalk of the leaf only, exposed to the light and air, as in fig. 5, not too tight, but just sufficient to keep the whole close, and exclude the sun, air and wet.

It will be seen by the above that according to the English and European method of performing common shield budding, you are cautioned to be careful to take out from the bark on which is the bud the small piece of wood on which the bark is, and which has served you up to this time to keep the bud and bark from drying and shrinking; but this "nice matter," as it is called, it is important to bear in mind, is altogether dispensed with in the American mode of shield budding; and the "American mode of shield budding," says Mr. Downing, (whose works we ought to presume form a part of every gentleman farmer's library,) "is found greatly preferable to the European mode, at least for this climate. Many sorts of fruit trees, especially plums and cherries, nearly mature their growth, and require to be budded, in the hottest part of our summer. In the old method," says Mr. D. "the bud having only a shield of bark, with but a particle of wood in the heart of the bud, is much more liable to be destroyed by heat than when the slice of wood is left behind in the American way. Taking out this wood is always an operation requiring some dexterity and practice, as few buds grow when their eye or heart-wood is damaged. The American method, therefore, requires less skill, can be done earlier in the season, with younger wood, is performed in much less time, and is uniformly more successful. It has been very fairly tested upon hundreds of thousands of fruit trees in our gardens for the last twenty years, and, although practiced English budders coming here, at first are prejudiced against it, as being in direct opposition to one of the most essential features in the old mode, yet a fair trial has never failed to convince them of the superiority of the new one."

Having thus gone through with a process so light, and so interesting in its nature and results, that every schoolmaster might and ought to teach it, were it only for amusement at play-time, in the country schools, and even to the girls who are to make housewives, as well as to boys who are to be their husbandmen; we have only to copy what we find in the books, and what is the result of ample experience as to the *future treatment*.

In about two weeks after the operation it will be seen, by the roundness and healthy look of the bud, whether it has taken; and we are assured that not more than six or eight per cent. of them ought to fail. In about a fortnight after, let the bandage be loosened, so as to allow the whole plant to swell, and in about five weeks from the time of budding, it may be removed altogether; but sometimes, when the budding has been performed very late, the bandage is left on through the winter.

Just when the sap begins to move in the spring you "head down" the stock at about half an inch above the bud, by beginning behind it, and making a sloping cut upward. A piece of the stock is sometimes left, about six inches long, to which to tie the first summer's shoot, to prevent it from being broken by the wind; a precaution not amiss when the shoot from the bud is exposed to high winds; but even then it is suggested to be better, if you see any danger, to tie a short stick on the top part of the stock, and to this tie the young shoot, when the sap will all go into the shoot through and from the bud, instead of being divided between it, and six inches of the stock sometimes left as above stated. Mr. Downing bears testimony to the great advantage, when budded trees do not take readily, in having recourse to Mr. Knight's excellent mode of budding thus described in the *Horticultural Transactions*, and in which he employed two distinct ligatures to bind the buds in their places: "One ligature was first placed above the bud inserted, and upon the transverse section through the bark; the other, which had no farther office than securing the bud, was applied in the usual way. As soon as the buds had attached themselves, the ligatures last applied below were taken off, but the others were suffered to remain. The passage of the sap upward was in consequence much obstructed, and the inserted bud began to vegetate strongly in July; and when these had afforded shoots about four inches long, the remaining ligatures were taken off to admit the excess of sap to pass on. Thus, the upward sap being arrested, the union of the upper portion of the bud (which in plums frequently dies, while the lower part is united,) is completed, and success secured."

If farmers were not, of all classes, the most careless, if not improvident, they would take care not only to learn themselves, but to have their children (daughters no less than sons) taught the common practice of grafting and budding, if not the principles of vegetable physiology involved in these processes; as also how to propagate by CUTTINGS AND LAYERS, both of which are described by John I. Thomas, in his valuable little work, the "*FRUIT CULTURIST*." By CUTTINGS, he says, consists merely in cutting off a branch or shoot from the tree, and inserting it into the soil, leaving the upper end above the surface. The moisture of the soil supplies the sap.

As to LAYERS, Mr. Thomas says: "Many plants which cannot be increased by cuttings, and, indeed, with great difficulty by budding and grafting, may be readily propagated by *layers*. This consists in bending down the branches to the ground, and covering the middle portion with soil. The portion takes root, and then the branch is separated."

How easy it would be for every farmer to beguile his time in the performance of these operations, to study the nature of them in books, and thus, at the same time that he supplied his family with various and choice fruit, save the time, and the money, and the character, that are now lost in idleness in taverns and grogeries.

THE EFFECT OF FREE TRADE ON THE BRITISH FARMER.

It is universally agreed that the admission of foreign grain into England, with a view to the protection of the manufacturers against the high price of food, which is, in fact, the raw material of every industry, has reduced the English cultivator to great straits. It is in fact with him, from all we can see, a question of life or death. The friends of the free admission of foreign grain contend, that the admitted difficulties and distress of farmers, may be overcome by what is there called emphatically *high farming*—that is, by the application of the highest degree of science in the practice of agriculture, and by the liberal application of capital in draining and manuring. The farmers generally answer to this allegation in a tone of denial and despair. It would really appear that ruin stalks them in the face. The effect will be to drive thousands to this country, who would otherwise remain at home, and any policy of our government, that would raise the price of labour, in other industries, would at once tempt the immigrant to our shores, and when he came, so increase his power of consumption over that which he possesses abroad, even if there he was, in fact, a consumer of American produce, that such policy could not fail to benefit American agriculture. A writer in a late English paper, on the possibility of meeting their difficulties by any practicable system of high farming, makes the following suggestions, which we give for the sake of making the inquiring farmer in America familiar with the burdens to which agriculture is subject in England. As an item of information in the line of his business, is it not worth the small space it occupies? To read it understandingly, let him turn English into American currency, near enough for all practical use, by multiplying the pounds by 5 to bring them to dollars, and the shillings he may regard as quarters of dollars—or 24 cents for more exactness, the penny for 2 cents.

Finally, is it not wonderful that a greater number of these English and Scotch farmers do not come here, and buy the fee-simple of land for what the land pays there, not for *rent*, but for *tithe and poor rates*?

In East Lothian, in Scotland, farmers often pay \$35 an acre *rent* per annum. That is near the town, but generally from \$10 to \$20, but the tenant goes on the land with a *capital* equal to \$50 an acre; and then he practices with a skill and industry and energy which these requirements and means demand and imply, enabling him to turn his capital and skill to account. Yet what would not the same skill and *capital employed* do here—that is, if other industries were so encouraged, that the farmer would have a remunerating demand on the spot for meat and mutton, such as exists in England?

What madness in a nation like this to forego the full development and highest and best manufacture and use of the bountiful materials which God has given us for the consummation of every industry!

That much remains to be done to the land in some districts in draining and other permanent improvements, as also by a more skilful system of farming, is obvious to every person acquainted with the mere rudiments of agricultural knowledge; but it must be admitted by the advocates of scientific advancement that the great breadth of land in England and Scotland, in regard to cultivation, is worthy of comparison with any like extent of land in the world. Where is the average produce per acre so great as here. The farmers have for the last 30 years been in a state of healthy progression, and although they may not now run in the race of science with the eagerness some of their friends may desire, they are not unmindful of the importance, indeed of the absolute necessity, of adopting the various improvements in cultivation suggested by the superior intelligence of the age. All, however, cannot be luminaries; but the more unlettered of practical farmers will surely follow every course of improved culture fairly tested and sanctioned by the better informed of their neighbours. But can low prices be met by high farming? I am a practical farmer, and although, fortunately, I am not de-

pendent on the prosperity of agriculture, my earliest associations and present sympathies are deeply rooted in the cause. My experience has been upon a clay farm of 100 acres, 65 acres of which are arable and the other 35 acres are grass. I have done much to improve the land, and have not grudged any outlay of a reproductive character. The following is the result of my last year's cultivation:

Wheat from the harvest of 1848, 5s. 8d. per bushel	£204	3	0
Profit by horse-keep, exclusive of farm horses	28	10	0
Sheep sold	37	1	6
Pigs do.	32	6	0
Poultry	5	6	0
Beans (not consumed on the farm)	13	0	0
	£320	6	6
One year's rent	£100	0	0
Tithe and rates	31	0	0
Labour, exclusive of work done by farm horses	142	3	0
Guano and other manures bought	26	0	0
Tradesmen's Bills	22	10	0
	£321	13	0
Loss, besides interest of capital	1	6	6
	£320	6	6

Such is my experience of last year. Had, however, the old average of prices been maintained, I should have had a moderate profit, but no more.

Total realized as above	£320	6	6
Depreciated value of produce, one quarter	106	15	6
	£427	2	0
Expenditure as above	321	13	0
	£105	9	0

Wheat is the great crop on clay land, and I had 30 bushels to the acre last year. This I consider a fair yield on the average of clay land. If I am wrong in the view I take, I should be glad for any of your readers to correct the opinion, and kindly to supply a balance sheet, in order that one may judge of the quantity produced, and count the cost of production. I need not refer to the price of produce with which the present season has opened. The fact is too well known. I regret to learn that the farmers in some districts have reduced the wages of the labourer to 6s. a week. In my own neighbourhood, the able-bodied man is at present receiving 9s.; but this rate cannot, I fear, be maintained through the winter. The competition for farms, arising from the increase of population, and the death struggle of many for a bare subsistence, will keep up rents for a time.

TURNIPS—THEIR KINDS AND CULTURE.

WE have never yet been persuaded, that the turnip may not be cultivated afield, profitably, to a much greater extent than it is in the United States; for it may probably be affirmed, that there are not six States in the Union, where they are grown expressly as *food for stock*. Now, as it is well known, that in the country, next perhaps after Belgium, most worthy of being studied and followed in her steps that relate to agricultural improvement; they look to this vegetable as the foundation of their hopes of improvement—nay, may even be said of their wealth and power; it assuredly behooves us, to consider and to find out, whether and why it is, that turnips may not, in like manner, be looked to as one of the means of recruiting our exhausted lands, and if they cannot—what is the *best substitute for them*? Have we any substitute at present? Some will say Indian corn. But how can that be so, seeing that corn is never given to cattle, except for *fattening*? The *grain* of corn is rarely looked to as the means of augmenting the fertilizers of a farm,

as turnips are universally in England. Who has ascertained and who uses and relies upon the value of corn for that purpose? Do we or do we not want, some bulky vegetable to combine with the hay and straw? both for the health of the animal and the increase of the manure? And what vegetable or root is best in our climate and circumstances? Is it cabbage, or carrot, or turnip? Well we know, that in their nature and composition turnips seem to demand a degree of moisture which is characteristic of the English, and *not* of *our* climate, generally—yet how is it, that under the effect of premiums offered for heaviest crops on parts of acres, we have so many accounts of yields at the rate of 700 bushels and more? If we are not mistaken in our recollection, Col. Powell repeatedly raised upwards of 1000 bushels of *ruta бага* to the acre, near Philadelphia, while at Marshfield, and elsewhere, particularly at Mr. Corning's farm, near Albany, under the management of Mr. Sotham, we have repeatedly seen crops of turnips that would be accounted good, even in Norfolk, England. The specimens exhibited at the last cattle show, from Otwell, near Easton, Md., were twelve inches in diameter, and the summer, we believe, was accounted a dry one. We have often thought that through all our mountain regions, where moisture in the form of fogs and dews, insure constant supplies of grass, turnips might be made subservient to their grazing systems, and to maintaining their lands in their pristine fertility. It is not even in England, however, where a thousand bushels to the acre is a common crop, that this root is expected to pay, *per se*—but it is considered indispensable to that heavy supply of barn-yard manure, which causes it to be accounted "*meat and meal*" for the English farmer. The turnip fattens the bullock, and the sheep, and the offal of the bullock and the sheep fattens the land to the tune of 30 to 40 and 50 bushels of wheat and 60 of barley to the acre, as a common yield.

For ourselves, we apprehend that the frequent failures by which American farmers are deterred from raising this root arise from *light manuring*, *late sowing*, and leaving the crop *too thick on the ground*. It is a crop too that wont bear the distant transportation, which must ensue when the producer, as with us, in most cases, is far away from the consumer; because much of its bulk and weight, in proportion to its nutritive properties, is of no value—being *water*—and therefore, to be raised economically, must be fed where they are made.

Of purple and yellow turnips, grown on various soils, and examined in the laboratory of Professor Johnston, the lowest proportion of *water* was 87.45 parts in 100.

He gives a statement of 61 tons, without leaves, to the acre in 1814, on the farm of the Duke of Portland; and of a crop of 55 tons in the same parish, by Mr. Stonearth. The first of these crops, he says, was equal to 6 tons, the latter to 5½ of dry nutritive matter per imperial acre. In England, they classify their turnips into Swedish or *ruta бага*, *yellow* turnips and *white*—and of these again there are, of the Swedish turnips, nine sorts, of the yellow, sixteen; and of the white fourteen, under as many different names. The celebrated William Cobbett was the first to teach us the superiority and the management of the Swedish turnip or *ruta бага*. The potato, he said, was made up of "dirt, water, and straw." Baxter, who deserves to be regarded as high authority says (meaning, of course, when they are cultivated as they are universally in England for food for stock), that one kind from each of the three classes seems almost requisite to be cultivated on every farm; although the yellow is omitted in some districts, and the Swedes in others. Where the Swedes are omitted they have never been cultivated, and where the yellow is the favorite, the Swedes are unknown, for where they are known, their culture is *never relinquished*, and they are treading hard upon

the yellow, and even curtailing the boundary of the white. The white varieties come earliest into use, and will always be esteemed on account of their rapid growth and early maturity, though unable to withstand the severest effects of frost. It is they which first support the cattle and sheep; being ready for use as soon as the pasture fails. The yellows then follow, and last for about two months, that is to the end of February or thereabouts; then the Swedes finish the course, and should last till the grass is able to support the cattle. Of all the varieties of white turnip the white globe (*brassica rapa, depressa alba*) is generally considered the best for early maturity, sweetness, juiciness, size of root, weight of crop, and elegance of form. Though the root does not feel particularly heavy in the hand, continues Baxter, it does not emit a hollow sound when struck. Its specific gravity is 0.84, and its nutritive properties 42 parts in 1000; of which are, of mucilage 7; of sugar 34, and of albumen or gluten 1.

The weights of prize samples vary from 8 to 15½ pounds each root, and the crops from 20 to 35 tons per acre! The nutritive property of the yellow, says Baxter, is 44 in 1000 parts, and of the Swedish turnip 64 in 1000, of which 9 are starch, 51 sugar, 2 gluten, and 2 extract. Picked specimens have varied in weight from 7 to 9½, but 8 to 10½ is not uncommon. A crop of 16 to 20 tons may be obtained by very ordinary culture, and in the neighbourhood of large towns (meaning where manure may be more freely used), he says, 28 to 35 tons may be obtained.

It is not, reader, that we are at any loss for a subject, that we have turned to one so commonplace and homely as this; on the contrary, our files of matter, well worthy of being read, are swelling to repletion, and seem, like hoven cattle, to cry aloud for relief; but if circumstances permit and cause you to make trial of turnips as food, even for a few sheep or cattle, now is the time to make your preparation; and therefore, while it may not yet be too late, we deem it expedient, and hope it may prove acceptable, to give the following account of the result of an inspection made, by members of a Farmers' Club in England, over a number of fields in the district—not for the purpose of any competition among farmers, but (for what we should like to see practiced in our own country), to give general information as to *the real ordinary produce in the district*, and also, by comparing the weights produced in different fields, under ordinary management, but varying circumstances, that useful and practical suggestions might be elicited. The inspection was made over thirty-four farms, occupied by members and others; all except five, being tenant farmers. The mode adopted was by taking ten lineal yards in different fields, selected as affording a fair average. The results were thrown into tabular form, of which we have taken the first sixteen instances as sufficient for our purpose, which is to give the American reader for once, a fair view of that, of which all have heard so much, *the turnip culture of England*—which, as we before said, lies at the bottom, and forms the basis of her national subsistence and power. Take the turnip from English husbandry, and you withdraw the keystone in the arch of her strength as a nation. But before giving as much of the *table* as will answer the purpose of the reader just as well as if we gave the whole of it, it may make this article more satisfactory, to give also some general observations which were agreed on by the club, as conclusions to be drawn from all the facts that came in view.

Among other points on which they came to an agreement, one was—that *early sowing* had been invariably advantageous. In the case of Swedes and yellow turnips, those sown before the middle of May were *several tons* more productive to the acre than those sown about the first of June. But be it remembered, that they begin to prepare their land immediately after harvest. The general impression there is, that on land of ordinary fertility, the space between

the drills should be from 28 to 30 inches. As to the space between each root in the hill, that depends on the quantity of manure and the fertility of the land. The impression of the club was, that although the general practice was to leave them 7 or 8 inches in hoeing out the crop, that was much under the proper width, "especially with *full-mixed* manure"—meaning compost, bones, guano, &c. They say—"It appears to be a very general practice to apply, in addition to 16 or 18 yards (cubic), of dung per Scots acre, about two or two and a-half cwt. of guano or 15 bushels of bones." Here, however, is what will stagger the American farmer, who, in too many cases, pays so little attention to the quantity or quality of manure. The club say, "but while these manures do not exceed the present prices, viz., 2s. 3d. per bushel for bones (54 cents), and £9 to £10 (\$45 to \$50) per ton for Peruvian guano, and if the best beef and mutton reach about 6d. (12 cents) per lb., there seems no question, but a large quantity of extra manure should generally be applied; the club adhering to an opinion expressed in a former discussion, that the value of 40s. (\$10) per Scots acre of purchased manure be applied in addition where the farm-yard manure gives 15 yards over the whole green crop on the farm. The first and most material point evidently to be attained, however, is an addition to the quality and quantity of farm-yard manure.

The Scotch acre is equal to one acre, one rood, two perches (nearly) of English measure.

We have referred to the probably better adaptation of our mountain regions to the growth of turnips, and here we find it stated in the amount before us, that with the exception of one or two farms, the whole are from 150 to 400 feet above the sea level, but the farm of Kirkhill, on which the crops were above an average, was more than 500 feet above.

We have, since writing the above, seen it stated in the *American Farmer* by Patuxent Planter (one of the few agriculturists who exercises the faculty of *clear thinking*, about everything connected with his vocation), he says:—

"Again, if our modern farmers would only raise large crops of roots, and manure the land for them as our forefathers used to manure the 'turnip patches,' we should soon have our whole land like a rich garden spot."

Surely there need be nothing more pointed than this in favour of raising roots as food for stock, and the question is again as to the kind.

In England, the experience of one writer some years ago, with a considerable flock of sheep, folded over thirty acres of common and Swedish turnips, led to the inference that one pound of meat is made during the consumption of every 150 pounds of green food; and in the *Maine Farmer*, we find the following comparative estimate of different kinds of food.

"Hay is the food for cattle during winter. If they can get good hay enough, during the cold season, they do very well. It is not always that the farmer has sufficiency of this for his stock, and hence it is useful to know the comparative value of other articles which may be used as substitutes for it. It is also more agreeable, and we think more profitable, to mingle other articles with hay. We have prepared from various sources the following table:—

"Taking good hay as the standard, 100 lbs. of hay equal 276 lbs. carrots; 300 lbs. ruta бага; 317 lbs. mangold wurtzel; 201 lbs. potatoes; 494 lbs. common turnips.

"By calculating 60 lbs. for a bushel of any of the above roots, it will be seen that one ton of hay equals 91 bushels of carrots; 100 bushels of ruta бага; 106 bushels mangold wurtzel; 67 bushels potatoes; 165 bushels turnips.

"From this it will be seen how much fodder you get of each, per acre, compared with good hay.

"In regard to straw, experiments have established the following estimate as very near the truth; 100 lbs. of hay equal to 272 lbs. new wheat straw; 166 lbs. barley straw; 169 lbs. pea straw; 94 lbs. clover hay."—*Maine Farmer*.

Having alluded to the uniformly heavy crops of turnips obtained at Marsh-

field, however, it may be proper to note the conformity of management there to the English system of high manuring and thorough preparation in other respects—for the whole farm lies open to the sea, rising gradually from the “marsh” from which it takes its name.

TABLE OF FIELDS OF TURNIPS,
Inspected between 20th and 22d of November, 1849.

KIND OF TURNIPS.	Drills apart Inches.	No. of Turnips in 10 yards.	WEIGHT.		MANURE PER SCOTCH ACRE.					When Sown.
			Per Scotch Acre.	Per Imp. Acre.	Farm yard dung- Cubic yard.	Guano. Cwt.	Dissolved Bones. Cwt	Ground Bones. Bushels.		
									Tns. Cwt.	
Hardgrave, Dalton Parish—										
Swedes	28	28	35 12	28 9	15	4	0	17	May 23 & 25.	
Purple Top Yellow	28	28	31 8	25 2	15	2½	0	13	June 1 to 6.	
White Globe	28	26	33 3	26 10	12	2	0	10	June 8 to 24.	
Hardy Green	28	29	31 14	25 7	15	2½	0	13	June 12.	
Smallholm, Lochmaben—										
Swedes	26	42	26 13	21 6	15	1	1	0		
Yellow Bullock	26	43	27 9	21 19	15	1	1	0		
Preston House, Lochmaben—										
Swedes	28	45	29 13	23 14	28	1	1	0		
Yellow	28	41	26 10	21 4	28	1	1	0		
Greenhillhead, Lochmaben—										
Swedes	26	44	24 6	19 9	26	3	0	0		
Yellow Bullock	25	35	37 0	21 12	25	2	0	6		
White Globe	25	32	31 0	24 16	25	2	0	6		
Dalfibble, Kirkmichael—										
Swedes	27	44	30 0	24 0	20	2½	0	0		
Ditto	27	44	27 17	22 5	20	0	0	15		
Yellow Bullock	27	44	22 16	18 5	20	2½	0	0		
White Globe	27	43	32 11	26 0	20	2½	0	0		
Ditto	27	46	32 4	25 15	0	2½	0	15		
Hillside, Dryfesdale—										
Swedes	28	33	26 10	21 2	25	2	2	0	May 15 to 20.	
Yellow Bullock	25	57	22 16	18 3	20	2	0	16	June 12.	
Common Red	28	44	27 0	21 9	20	0	2	0	June 20.	
Yellow bullock	26	48	30 16	24 10	20	2	0	0	May 25.	
Dryfeholm, Dryfesdale—										
Swedes	28	40	29 6	23 7	24	2½	0	0	May 12.	
Ditto	29	37	22 18	18 5	24	2½	0	0	June 1.	
Beckton, Dryfesdale—										
Swedes	27	43	31 16	25 6	20	2½	0	0		
Yellow Bullock	28	52	32 12	25 19	20	2½	0	0		
Kirkburn, Dryfesdale—										
Swedes	29	42	34 16	27 14	30	2	0	0	May 12.	
Ditto	29	40	29 0	23 4	30	0	0	0	May 6.	
Yellow Bullock	27½	34	26 12	21 4	20	2	0	0	May 28.	
Lockerby Townhead, Dryfesdale—										
Swedes, alter-										
nate	26	41	24 10	19 12	35	0	0	0	June 6.	
Yellow Bullock	26	41	32 0	25 9	35	0	0	0	June 6.	
Broomhouses, Dryfesdale—										
Yellow	29	36	26 16	21 7	26	0	0	0		
Swedes	30	44	32 6	25 14	26	2	0	0		
Millbank, Applegarth—										
Swedes	29	56	31 9	25 1	20	2½	0	0	May 30.	
Yellow Bullock	29	42	29 11	23 11	20	2½	0	0	June 2.	
Ditto, undrained	30	50	17 3	13 13	0	2½	0	16	June 9.	
Muirhousefoot, Applegarth—										
Swedes	30	34	21 10	17 2	20	2½	0	0		
Yellow	27	62	26 18	21 9	18	0	0	0		

KIND OF TURNIPS.	Drills apart Inches.	No. of Turnips in 10 yards.	WEIGHT.		MANURE PER SCOTCH ACRE.					When Sown.
			Per Scotch acre.	Per Imp. acre.	Farm yard dung. Cubic yard.	Guano. Cwt.	Dissolved Bones. Cwt.	Ground Bones. Bushels.		
			Tns. Cwt.	Tns. Cwt.						
Muirhousehead, Applegarth—										
Swedes	27	36	26 18	21 9						
Balgray, Applegarth—										
Swedes	29	45	28 6	22 11	35	0	0	0		
Yellow Bullock	29	43	36 14	29 3	35	0	0	0		
Lang's Green										
Top Swede	29	48	33 0	26 5	35	0	0	0		
Bellcathill, Applegarth—										
Swedes	29	50	26 6	20 19	30	0	0	0		
Yellow Bullock	29	42	23 12	18 16	30	0	0	0		
Ditto	29	66	23 5	10 10	0	4	0	0		

The original table contained eighteen fields more, but we have given enough to show the run of the fields and the system. At the end of the whole the English editor says, the leaves and roots were excluded, and that the average weight of all the fields

	PER SCOTS ACRE.		IMP. ACRE.	
	Tons.	Cwt.	Tons.	Cwt.
Was for Swedes	27	9	21	16
" Yellow	25	6	20	2
" Common	28	2	22	7

After all, the expediency or profit of root culture and the extent to which it should be carried, must depend on the price of the root itself in an available market, or on that of the thing to the production of which, whether milk, meal, or meat, it is intended to contribute. A writer in a late number of an English agricultural paper puts down the cost of an acre of roots there, as follows:—

"I charge rather less for hoeing, as I make use of Garret's horse-hoe, which costs something less than 9*d.* an acre, and I put interest on capital at 5*s.* 6*d.* an acre more than your correspondent.

ESTIMATE.

	£.	s.	d.
Rent, tithe, and taxes	2	0	0
Interest on capital, 15 <i>l.</i> per acre	0	15	0
Ploughing and subsoiling in autumn	1	5	0
Cultivator in spring	0	2	6
Double harrowing and rolling	0	4	0
20 tons manure and filling	4	0	0
Ridging	0	2	0
Women spreading dung in furrows	0	1	3
Splitting the ridges over the manure	0	2	0
Drilling and seed	0	4	6
Singling	0	3	6
Twice horse-hoeing (Garrett's)	0	1	8
Hand-hoeing in the rows	0	3	6
Pulling, topping, and storing in clamps	0	7	0
Four bushels superphosphate of lime drilled with the seed	0	16	0

£10 8 3

"I am inclined to think horse and man labour somewhat under-estimated, in respect of the application of the manures, and that a safer estimate would be 10*l.* 10*s.*—*C. L.*"

Of Garrett's patent horse-hoe, here referred to, the reader may expect a drawing and farther notice in our next.

PRACTICAL ADVANTAGES OF CHEMISTRY TO PRACTICAL FARMERS—QUESTIONED.

Winchester, December 21st, 1849.

DEAR SIR—Inclosed you will find five dollars, which place to my credit. I trust you will not attribute my tardiness in remitting to lukewarmness or indifference in the success of your valuable paper, far from it. The contrary is the fact. I hope you may be abundantly supplied with the “needful” and every other requisite, so as to be able to communicate a little more “common sense” to a certain portion of our community, who are burdened in so unusual a degree with “uncommon sense”—let them have it. *The true policy will prevail at last.*

A great deal has been said and written of late, on the importance of a knowledge of agricultural chemistry to the farmer, to enable him to cultivate his lands in the most profitable manner to himself and fellow-men.

Now, my dear sir, will you be so good as to tell me what practical good chemistry is to a farmer (as a farmer), and what discovery has chemistry ever made that would enable him to raise one blade of grass more? I am particularly anxious that you will publish the answer to these questions in the “Plough, the Loom, and the Anvil,” first, because you would take a more impartial view of the subject, than any one I know—and secondly, because there is considerable diversity of opinion and much interest manifested by the farmers in this section of country. I trust you will not consider it presumptuous or arrogant in me to array myself on the negative side of this question, and in opposition to such men as Von Thaer, Liebig, and a host of others. With all due deference to their learning, I think they start on false principles. For instance, they set down as an axiom that plants derive all their elements from *without*, and cannot produce an element in any other way—that is, all the carbon, oxygen, hydrogen, nitrogen, sulphur, phosphorus, potash, soda, silica, lime, &c., are drawn from the earth, air and water, just in the same state it is found in the plant when analyzed—if that is true, it would necessarily follow, that for a farmer to *keep up* the fertility of his farm, he must always return to it exactly as much as he takes off—and to *improve* it, he must return more. Now, sir, do you know a single farmer in your extensive acquaintance, who returns to his farm anything like as much as he takes off? Yet many farmers not only keep up the fertility of their farms, but improve them considerably—how is it done? not by manuring certainly (I allude to large estates), for if he had manure sufficient to top-dress 3 or 400 acres of wheat he could not apply it—but by suffering his clover to fall on his fields the first year, and the second to be grazed or taken off, as close as possible, when it will produce a better crop of wheat than the preceding. It cannot be said in this case that anything was added to the soil, because, according to the above axiom, the field was exhausted to the amount of the first crop of wheat, and the first crop of clover that was allowed to rot derived all its elements from the soil, &c., which again was absorbed by the second crop taken off—therefore, the field would be left in exactly the same state it was in after the first crop of wheat—but this is not the fact, for we know the contrary to be true. To what, then, it may be asked, is attributed the improvement? Dr. R. J. Baldwin would say to the *shade* of the clover and to the *shade only*, and in my opinion he would say rightly.

It seems to me, that instead of plants deriving their elements without change from the earth, &c., they have the power of *creating* them by their vital process, and that the vegetative principle in the soil is an imponderable substance, but what it is, and how a living plant is produced out of it, is a question

which learned men have been attempting to solve, from time immemorial—and are no nearer the solution now than at the beginning.

I saw somewhere an account of an experiment which is in point—200 pounds of thoroughly dried earth was put into an earthen vessel—the earth was then moistened with water, and a willow tree, weighing 5 pounds, was planted therein—after 6 years the tree was removed and found to weigh 169 pounds 3 ounces—the earth was then removed from the vessel, again dried and weighed—it was discovered to have lost only two ounces of its original weight—thus 164 pounds of woody fibre, bark, roots, &c., were produced. Now, if the results of this experiment be correctly given, what becomes of the theory of Thaer and others, viz: that plants derive all their elements, without change, from the earth, &c.

If you think proper to publish this communication, I beg that you will omit my name; I have no desire to see it in print.

With great regard, I am yours,

JOHN S. SKINNER, Esq.

I. F. II.

We have no idea that “grown up” farmers are generally to be benefited by lectures on Agricultural Chemistry. But if taught at school, it would be to the man all his life an interesting and valuable accomplishment. That chemistry may throw light, however, on the constituent elements of soils, food, plants, and manures, who can doubt? Dr. Higgins, the State chemist of Maryland, has, by analysis, detected deficiencies and impurities in various artificial manures, and given most salutary advice on the subject to the legislature and the farmers of that State. We lately saw the following in the Edinburgh Review:—

CHEMISTRY AND VEGETABLE FOOD.

It is the object of chemical research not merely to explain known facts, but to remove misapprehensions and correct erroneous opinions. The recent determinations of the proportion of nitrogen contained in wheat have served both these purposes. Thus it was long asserted and believed, that the wheat of warm climates always contained more nitrogen, and was consequently more nutritive and of higher money value, than the wheat of our more temperate countries. But later researches have corrected this hasty deduction; and have placed our home wheat in its proper position, economical and nutritive, as compared with the wheat of India, of Southern Australia, or of the Black Sea.

Again, the British miller usually requires a portion of foreign wheat to mingle with our native grain, both to make it grind more easily, and to satisfy the baker with a flour which will stand much water. The pastry cook and the macaroni maker also demand of him a flour which will make a peculiarly adhesive dough. These several qualities were supposed to be inherent only in wheat which abounded, in an uncommon degree, in gluten, and which was produced under specially favourable conditions of soil and climate. Modern chemistry has the merit of gradually removing these misapprehensions, and of directing us to the true causes of all such differences.

So in regard to the superior amount of muscle-forming matter supposed to exist in wheat in comparison with other kinds of native grain, such as the oat. Experience had long taught the Scotch that oats, such as they grow in their climate, are a most nutritious food; but the habits of the more influential English, and the ridicule of a prejudiced lexicographer, were beginning to make them ashamed of their national diet. Chemistry has here stepped in, and by her analysis of both has proved not only that the oat is richer in muscle-forming matter than the grain of wheat, but that oatmeal is, in all respects, a better form of nourishment than the finest wheaten flour.

But, what is more, chemistry has brought us acquainted with the value of parts of the grain formerly considered almost as waste. The husk or bran of wheat, for example, though given at times to pigs, to millers' horses, and other cattle, was usually thought to possess but little nutritive virtue in itself. Analysis, however, has shown it to be actually richer in muscular matter than the white interior of the grain. Thus the cause of its answering so well as food for cattle is explained; and it is shown that its use in bread (whole-meal bread) must be no less nutritive than economical.

The true value of other kinds of food is also established by these inquiries. Cabbage is a crop which, up to the present time, has not been a general favourite in this country,

either in the stall or for the table, except during early spring and summer. In North Germany and Scandinavia, however, it appears to have been long esteemed; and various modes of storing it for winter use have been very generally practiced. But the cabbage is one of the plants which have been chemically examined, in consequence of the failure of the potato, with the view of introducing it into general use: And the result of the examination is both interesting and unexpected. When dried so as to bring it into a state in which it can be compared with our other kinds of food (wheat, oats, beans, &c.), it is found to be richer in muscular matter than any other crop we grow. Wheat contains only about 12 per cent., and beans 25 per cent.; but dried cabbage contains from 30 to 40 per cent. of the so-called protein compounds. According to our present views, therefore, it is pre-eminently nourishing. Hence, if it can but be made generally agreeable to the palate, and easy of digestion, it is likely to prove the best and easiest cultivated substitute for the potato. And no doubt the Irish *colcannon* (cabbage and potatoes beat together) derives part of its reputation from the great muscle-sustaining power of the cabbage—a property in which the potato is most deficient.

Further, it is of interest—of national importance, we may say—that an acre of ordinary land will, according to the above result, produce a greater weight of this special kind of nourishment in the form of cabbage than in the form of any other crop. Thus, twenty tons of cabbage—and good land will produce, in good hands, forty tons of drum-head cabbage on an imperial acre—contain fifteen hundred pounds of muscular matter; while twenty-five bushels of beans contain only four hundred pounds; as many of wheat only two hundred, twelve tons of potatoes only five hundred and fifty, and even thirty tons of turnips only a thousand pounds. The preference which some farmers have long given to this crop, as food for their stock and their milk-cows, is accounted for by these facts; while, of course, they powerfully recommend its more general cultivation as food for man.

We may add, while speaking of cabbage, that it is known to be so exhausting to many soils, that wheat will scarcely grow after an abundant crop of it. It springs up, indeed, but yields little straw, and early runs to a puny ear containing little grain. But the same analysis, which shows the value of the cabbage crop, shows also what it takes from the soil, and explains, therefore, the kind of exhaustion produced by it, by what special applications this exhaustion is to be repaired, and how repaired at the least cost.

Again: In many parts of our island furze or gorse grows up an unheeded weed, and luxuriates in favourable spots without being applied to any useful purpose. In other districts, however, it is already an object of valuable though easy culture, and large breadths of it are grown for the feeding of stock, and yield profitable returns. Chemical researches show its nutritive property to be very great. Of muscle-building materials it contains, when dry, as much as thirty per cent., and is therefore in this respect superior to beans, and inferior only to the cabbage. Under these circumstances we can no longer doubt the conclusions at which some experimental feeders had previously arrived, nor the advantage which might be obtained from the more extensive cultivation of gorse on many poor and hitherto almost neglected soils.

The history of the tussac grass is familiar to most persons.* A native of the Falkland Islands, where it grows in large tufts or tussacs, from which it derives its name, it is described as fattening in an extraordinary manner the stock, and especially the horses, which graze upon it. Some of the seeds which have been lately imported into this country having vegetated, the grown-up plants have been analyzed; and it was found, "that the proportion of muscle-forming ingredients in the dried grass is as great as in the best samples of wheat, oats, or barley, and therefore that the grass is of a very nutritious character." Thus its alleged feeding qualities are confirmed; and we may look forward to seeing it, on further trial, domesticated in Great Britain.

The money value of the above investigations is obvious enough, and we do not dwell upon them. But the same branch of chemical inquiry deals with questions of a larger and higher kind.

PROFITS OF FARMING.

SIR—I have tried to make out some long accounts in your paper about farming, but before I gets to the end, I forgets the beginning, and I have heard others in our neighbourhood make the same complaint; for I must tell you we be very good farmers but not much of scholars. Now let me show you and my brother farmers, in a short way, how my account stands, and I thinks they will say that theirs is pretty much the same.

* Here is another thing which we should long since have imported. For several years, two or three at least, we have had flattering accounts of its great value.

My landlord eats my wheat, the labourers eats the sheep, the parson the barley, the tax-gatherer the pigs and poultry, and my horses eats the oats. Now I want somebody to tell me what there is left to support my family, pay interest on capital, and tradesmen's bills with? An answer will oblige.

Yours obediently,

TENANT FARMER.

The average quantity of foreign grain and flour, imported in England in the fifteen years commencing in 1832, to 1st January, 1846, was 39,206,496 bushels, of 70 pounds to the bushel, equal to 4,900,812 quarters; and in two years ending in 1848, the two years of partial "free trade," the average amount per annum was 89,517,592 bushels, of 70 pounds to the bushel, or 11,189,699 English quarters. Thus the excess of import under free trade is 50,319,096 bushels of 70 pounds to the bushel, or about 60,000,000 of bushels our measure.

"Now," says Mr. Jones, who, we see, was one of the most conspicuous witnesses before the English "Agricultural Customs Committee," "it is a well ascertained fact that the cost of English labour (owing to our great amount of taxation), is 10 shillings, \$2.50 per quarter, in all the grain crops produced in England. Therefore," says he, "we find in the first onset of 'free trade,' that we have a diminished demand for English labour, to the amount of £3,144,940, or about \$15,724,700, which" he says, "would give a year's employment to 120,958 able-bodied English labourers, instead of which we have been compelled to pay £1,190,764, or \$5,753,820 to maintain *them* in workhouses."

Mr. Jones goes on to say, in a letter to the members of both houses of Parliament,—“To prove how much the free trade policy you have adopted, has lessened the demand for the labour of the people, I refer you to that fair and only correct test, the *increased amount of the poor rates*, and you will find that the average of the three years,

1844, 1845, and 1846, was	£4,990,000.
In 1847, ...	5,298,787.
In 1848 (free trade), ...	6,180,764.

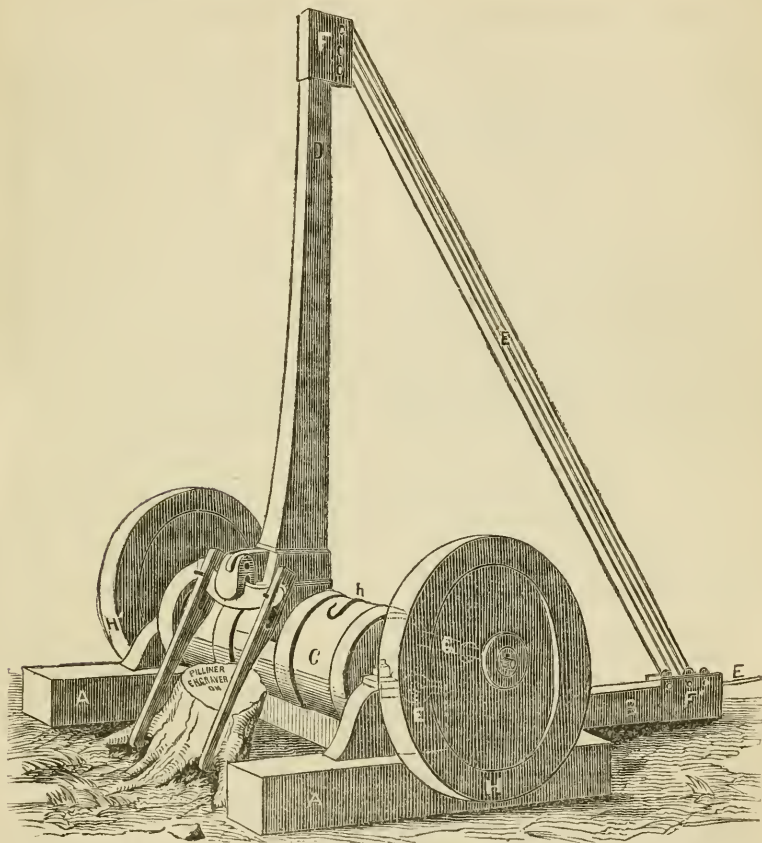
Here we have the wages of labour so reduced, and so many brought to beggary, that the taxes to support them, amount to \$30,903,820—*thirty millions of dollars!!* for poor rates alone!! or more than double what it *ought* to take to defray the whole expenses of the American government; were it not that we are following fast in the wake of European monarchies, with useless and costly foreign missions, their military establishments, and military pensioners.

Now we would thank any free trade farmer in Maryland to calculate and let us know, how much of *agricultural produce* the Baltimore and Ohio Rail Road Company is about to import, in the form of rail road iron, to be laid down through the heart of the *coal and iron regions of Maryland*, and whether the men, who ought to be employed in Alleghany county, in delving the coal, and making the iron, needed for that great work, must not now go to raising wheat and corn, and mutton and beef, instead of being customers to the farmer for these agricultural products?

Our marvel is, that the paragraph which announces the fact, that the rail road company had been, on the score of economy, compelled to send abroad for such an amount of what God has given us the means to make at home, should have gone the rounds of the papers of Maryland, without an universal denunciation of a policy so at war with the agricultural interests of that State! Is it that farmers are like eels being skinned, so used to it that they think nothing of it? Verily it would so appear!

ROGERS' PATENT EXTRACTOR.

THE drawing below represents but one form of a machine claimed to be the simplest and cheapest invention for the extraction of the roots or stumps of trees. It is designed to be worked by two or more horses or oxen—some of them have more machinery, and all different fixtures, to be geared on, or off, according to the work to be done.



A. Bed Frame.
B. Tongue or Draft Bar
C. Windlass.
D. Lever.
E. Chain or Rope.
F. F'. Pulleys or Shives.

G. Axle of the Wheels.
e. e'. Journals of Windlass.
H. H'. Position of Wheels during process of extraction.
h. h'. Hooks for chains.

Steam power or any other power may be applied. It is extremely useful to farmers, and often to railroad and common road contractors and others when grading near the surface, for extracting stumps and roots of trees from land; handling large stones, and other ponderous bodies. In many cases it does away with derricks, and is said to be superior to any machine for either of the above-mentioned purposes heretofore introduced, viz:—

In cheapness, simplicity, compactness, portability, quickness of operation, efficacy (it being able to overcome uncommon resistances), and convenience, in not only serving to take hold of, raise, and extract from the ground any considerable obstacle on the surface, but also performs the operation of loading the same upon itself as a carriage for conveying at pleasure.

Every 200 pounds of *power* is equal to ten tons of *weight* or *resistance*. When the lever is brought forward and secured in a horizontal position to the tongue or draft bar, the machine then becomes a carriage, being drawn by the tongue or draft bar. For purchasing patent rights for not less than one county, address, post paid,

JOHN ROGERS,
Derby Line, Vermont.

DOCTOR FRANKLIN ON MANUFACTURES, BEFORE THE REVOLUTION.

The following letter from Franklin to one of his friends is now almost eighty years old, yet it has only now been brought to light. We offer it now to our readers because we desire them to see that the truths we now desire to teach are the same that were taught by the fathers of the Revolution, as they have since been taught by Washington, Jefferson, Madison, Monroe, and Jackson, all of them Southern men and planters, but all of them wise enough to see that the true way to give value to land was to make a market on the land for its products. We especially desire to call their attention to the remark of this sagacious man, so long since made, that our power to produce must inevitably greatly exceed the power of Europe to consume our products, and to the effect of this difference in the *constantly diminishing* value of sugar, cotton, tobacco, and other agricultural products, as compared with the cloth and iron, as set forth in the third chapter of *The Harmony of Interests*, published in our January number, the necessary effect of a *dependence* for supplies upon people whose labour is less valuable than our own.

London, April 22d, 1771.

SIR:—I duly received your favours of the 4th of October and the 17th of November. It gave me pleasure to hear, that though the merchants had departed from their agreement of non-importation, the spirit of industry and frugality was likely to continue among the people. I am obliged to you for your concern on my account. The letters you mention gave great offence here; but that was not attended with the immediate ill-consequences to my interest that seem to have been hoped for by those that sent copies of them hither.

If our country people would well consider, that all they save in refusing to purchase foreign gewgaws, and in making their own apparel, being applied to the improvement of their plantations, would render those more profitable, as yielding a greater produce, I should hope they would persist resolutely in their present commendable industry and frugality. And there is still a farther consideration. The colonies that produce provisions grow very fast. But of the countries that take off those provisions, some do not increase at all, as the European nations; and others, as the West India Colonies, not in the same proportion. So that though the demand at present may be sufficient, it cannot long continue so. Every manufacturer encouraged in our country, makes part of a market for provisions within ourselves, and saves so much money to the country as must otherwise be exported to pay for the manufactures he supplies. Here, in England, it is well known and understood, that wherever a manufacture is established which employs a number of hands, it raises the value of lands in the neighbouring country all around it; partly by the greater demand near at hand for the produce of the land; and partly from the plenty of money drawn by the manufacturers to that part of the country. It seems, therefore, the interest of all our farmers and owners of lands, to encourage our young manufactures in preference to foreign ones imported among us from distant countries.

I am much obliged by your kind present of curious seeds. They were welcome gifts to some of my friends. I send you herewith some of the new barley lately introduced into this country, and now highly spoken of. I wish it may be found of use with us.

I was the more pleased to see in your letter the improvement of our paper, having had a principal share in establishing that manufacture among us many years ago, by the encouragement I gave it.

If in anything I can serve you here, it will be a pleasure to

Your obliged friend, and humble servant,

B. FRANKLIN.

To Mr. HUMPHRY MARSHALL, *West Bradford, Chester Co.*
per Capt. Osborne, with a brown paper parcel.

AMERICAN INTERESTS *versus* "THE PUBLIC OPINION IN ENGLAND."

The message also transmitted a second letter from Mr. Bulwer, dated

British Legation, Washington, Jan. 3, 1850.

SIR:—It having been represented to her majesty's government, that there is some idea on the part of the government of the United States, to increase the duties upon British iron imported into the United States, I have been instructed by her majesty's government to express to the United States government the hope that no addition will be made to the duties imposed by the present tariff of the United States, which already weigh heavily upon British productions, and I cannot but observe, for my own part, that an augmentation of the duties on British produce or manufactures made at a moment when the British government has, by a series of measures, been facilitating the commerce between the two countries, *would produce a very disagreeable effect upon the public opinion in England.* I avail myself, &c.

(Signed)

HENRY L. BULWER.

The above annunciation, from her Britannic majesty's minister, well deserves the careful attention of our readers—that is, if plain plodding farmers and planters have any right or interest, in the transactions of government—and especially in the laws that regulate the terms of our commercial exchanges with foreign countries—a right and an interest, which some would seem to doubt, who raise the question, *What has an agricultural journal to do with political affairs?* For ourselves, in the case above presented—all unskilled as we are in the ways of diplomacy—we may venture to express our regret, that the accomplished secretary of state did not embrace the occasion, which this letter would seem to us to have fairly offered, not merely to acknowledge its receipt, but to show that he had fully "noted its contents!"

The President's message to Congress had not then been published in England, or if it had, not long enough before, for instructions predicated on a view of it, to have been sent to Mr. Bulwer; but it was doubtless in apprehension of the influence of the well known sentiments of the President, in respect of the protection needed for the development and fruition of *our own* natural resources, and especially our resources in the great articles of *coal and iron*, that these instructions were sent to the British minister.

We have, in fact, only to suppose that they would allow brother Jonathan a small portion of common sense, to see how naturally, and without any particular representation to her majesty's government, they would conceive that there might indeed, be "some idea on the part of the government of the United States to increase the duties upon British iron!"

Well enough do we know, that all beyond the clear and patriotic recommendation of the President on this subject, must be effected by legislation; that is, if we ever mean to show that this nation (not as a party but as a nation), has arrived at the conviction expressed by General Jackson, that "we have been too long subject to the policy of British merchants." Still as Sir Henry was not satisfied with fulfilling his instructions, to express the hope of her majesty's government, that "no addition will be made to the duties imposed by the present tariff of the United States," but proceeded to add, for his "own part," that any such addition would "produce a *very disagreeable effect upon the public opinion in England;*" would not our secretary then have been more than justified in replying, for *his* "own part," (with the permission of the President,) why it was that the government of the United States feels itself bound in the premises, to consult the public welfare of its own country, rather than the interests, and the public opinion of England? That is, on the supposition that the Hon. Secretary really entertains views on this

subject in harmony with those of the President and the head of our financial department.

How natural, and how exempt from all appearance of discourtesy would it have been, to indicate (in reply to the suggestion of "offence to British public opinion"); how incompatible with American interests, and how subservient to "the policy of British merchants" it is for us to go on forever leaving undisturbed in their beds, our own unlimited deposits of coal and iron, at the very time that we are importing, even into Alexandria, in view from Sir Henry's chamber windows, hundreds of thousands of dollars worth of beef and mutton and flour, in the shape of *English railroad iron* to be laid down through the coal and iron mines of Virginia! while her farmers are employed how? Why, reader, it was but a few days since, that in the streets of Washington, we stopped a man driving a wagon and four lean horses, to "worm it out o' the fellow" what he was about? and this was the result. He had brought from Virginia $\frac{3}{4}$ ths of a cord of green wood, ten miles, paying toll going and coming, and was wandering over the ten miles square, to beg some one to take it at \$1 75 cents for the load, and yet Virginians are crying out—"free trade"—"let us have free trade!"—let us import our iron from England, while England levies on our tobacco as much (\$16,000,000) as *ought to pay* all the expenses of our government! her minister at the same time telling our secretary of state, that to raise the rate of duty on British iron, would be "*very disagreeable to the public in England!*" Ah! we are a wonderfully wise people, are we not?

Mr. Bulwer, at the time at which he penned this letter, was, no doubt, alarmed lest anything should be done calculated to affect "public opinion in England," and if such was his state of feeling, it must have been greatly increased by what has happened in the time that has since elapsed. For years, the people of that country had been told that the interests of land and labor were totally at variance with each other, and, during those years, the proportion of her population engaged in the work of transportation, conversion, and exchange, had been increasing as compared with that engaged in the work of production. The former was assured that to enable them to fare well and to grow rich, all that was needed was, that they should employ the "cheap labour" and the cheap lands of distant nations for the production of their food, in preference to the higher priced labour and lands at home, and after a long series of agitations, *protection was abolished*. What have been the results? * Have men obtained more food with less labour, or are they not

* For a view of the real condition of the English agricultural labourer, whose labour produces the beef and mutton, and potatoes, on which the labourer lives, who is employed in making the railroad iron that we import, the reader who has seen the "Harmony of Interests," by Mr. Carey, is referred to Part III., pages 113-14-15. It there appears, on undisputable evidence, that the weekly receipts and expenditures of a man for himself and family (nine in number) is as follows:—

	s. d.
Rent of cabin,	1
Tea,	6
Bacon,	5
Bread,	5
Soda soap, &c.	5
Fuel,	8
Total	8—\$2.

The only provision for clothing is in the extra wages paid at harvest time, while the family cannot be treated to the luxury of bad butter, without sacrificing the tea, two ounces of which must serve for a week, the half pound of bacon which affords but a mere taste on Sunday to each, some of the bread, which is already but too scantily supplied, or a portion of their fuel, the absence of which renders their home still more

compelled to give more labour for less food? The answer is to be found in the fact that the agriculture of Ireland is already ruined—that extensive tracts of land, heretofore in cultivation, are entirely abandoned—that the number of agricultural occupiers has fallen from three hundred thousand to one hundred thousand—that the land of that country has almost ceased to be saleable at any price, however low—that the people have been driven to find abroad the subsistence denied to them at home—that England is filled with the fugitives, seeking employment at any price*—that wages are gradually falling “below even the lowest level of recent times”—that the power of purchase on the part of the people of England is smaller than it was five years since, notwithstanding the great increase of population—that men are becoming daily more superabundant, and that from week to week, and month to month there are produced new measures, having for their object the expulsion of the machine—Man—*by which alone can value be given to land*. The system has been tried and found wanting. Alarmed at its effects, the people, land owners and labourers, are now combining their exertions to bring about a change of both men and measures, the near approach of which is evident from the recent division in the House of Commons, where, in a full house, the vote for protection stood at 243 against, 264 favourable to a continuance of the present system, the majority of 21 being far less than the number of placemen, whose votes would, on the next day, have been given to a new ministry favourable to a re-enactment of the system of protection. The British minister may well be alarmed at the prospect before his political friends, for, unless we greatly err, that which is now apprehended must speedily be realized in the restoration to power of the party favourable to the protection of labour and land, recently constituting so small a minority, and battling with such enormous odds against them.

To understand the system that we are thus invited to maintain, we desire that our readers should peruse the following, taken from a recent publication of Mr. McCulloch, the highest authority in England:—

“The Americans *must* come to us for iron and cottons, and must, therefore, themselves, pay the duties on them. But we may supply ourselves with corn in fifty other places besides the Union, and, hence, the duty on it would fall entirely on the United States grower and exporter, and not on the English consumer.”

“The Americans *must* come to us for iron,” and they *must* come to us to sell their food, and we, therefore, can fix the price of both, says this great English political economist, and such is the system we call free trade. If we continue, as heretofore, to make little iron, and they continue, as heretofore, to produce much corn and cotton, they must continue to give us a

cheerless and desolate; sugar, too, is out of the question, without trenching upon items more absolutely necessary. Nor is there any reserved funds for medicines, too often required by a family of nine, thus miserably situated. Yet this is, beyond all dispute, the condition of a vast number of English agricultural labourers, as reported on undoubted authority; and to make iron against English iron masters employing men thus situated, (the duty in this country being low when the price is low, and high when it is not needed,) we must bring our labourers down to this level, or we must raise the duty, which Sir Henry tells us on his “own part,” will be “very disagreeable to the public opinion in England!”

The whole of this evidence of the condition of English agricultural labour, under their “free trade” system, will appear in *The Plough, the Loom, and the Anvil*, in the course of the publication of the “*Harmony of Interests*.”

* “Thousands of able bodied Irish are entering our island, turned from their work in consequence of the emigration of Irish tenantry, under free trade, in thousands, and are outbidding our native labourers already. I had, last week, a request from a strong Irishman, who has a house and his family in this country, to give him any work at *nine pence a day*; and have this day (Jan. 11) offers from stout Irishmen to drain and scour ditches for me *for their meat*.”—*Letter in Blackwood's Magazine*, Feb. 1850.

constantly increasing quantity of those products for a constantly diminishing one of ours, and to give us more labour for less labour! Such has been the system, and such, we beg our readers to see and understand for themselves, must it continue to be, unless we determine to make a market on the land for the products of the land, and supply ourselves with cloth and iron; making, at the same time, a market for the surplus labour of Europe, and thus raising the condition of those who fly and those who remain at home, enabling them to become better customers to both farmer and planter. Our farmers are invited to contend with the serfs of Russia for supplying with food a people, the larger portion of whom produce nothing to be given in exchange, being themselves occupied in the work of exchanging the produce of the labour of others. "Look," says an able writer whose book we would gladly see in the hands of all our readers—"look at the hundred provision retailers in a single street, each burning gas and life till twelve o'clock at night, to parcel out those commodities which one could do as easily. Take up a directory—count the number of shopkeepers in any town—London, for example. It seems as if one-half of the whole population consumed the substance of the community in the profit of mere distribution, producing actually nothing, except, indeed, heartburning, rivalry, envy of one another. What a fearful waste is here of the mind, the time, the industry, the skill of society."* Producing little, they can have little to consume, and hence it is that poor rates are growing with such fearful rapidity, while "the breed is fast degenerating," as the power of purchasing either food or clothing is steadily diminishing.

Our planters are invited to contend with the Hindoo for supplying with the materials for clothing, a people who are unable "to afford to spare any of their wages for clothes. They beg," says our author, "the cast-off garments of the Lord and Lady Bountifuls of the parish; if they buy at all, it is uniformly second-hand clothes; and the result of numerous inquiries by the Anti Corn-law League, has been to establish the fact that, ten, twelve, fifteen, or twenty years, are often the term of life, to which a single pair of breeches is renovated, refitted, and patched."†

The object of protection is that of diminishing the number of transporters and exchangers, and increasing the number of producers—thus increasing the quantity of good things to be divided, without increasing the number of persons among whom the division is to be made. The object of the *monopoly system of England* is that of increasing the transporters and exchangers, and diminishing the producers, with diminished return to the labour and capital of all, and the consequences are seen in the fact that our planters now give twice as much tobacco for the same quantity of iron, as they did fifteen years since, and our cotton planters, whenever they are so *unfortunate* as to have a fine season and a large crop, give *six times* as much cotton for *less* iron than they did thirty years since. Such has been, and must continue to be, the consequences of the system described by Mr. McCulloch, by aid of which, our people are *compelled* to go abroad to purchase iron, and equally *compelled* to go abroad to obtain a market for food and cotton. So long as it shall be permitted to continue, our farmers and planters must continue to impoverish themselves for the maintenance of the paupers and nobles who live out of the labour of the agriculturists of Great Britain and the world, and for that of the maintenance of fleets and armies employed in the work of compelling the farmers and planters of the world to continue to pay taxes for that purpose. We trust the day is not far distant when they will open their

* "The Mother Country," by Sydney Smith, p. 43.

† Ibid. p. 28.

eyes to the fact that the poverty of the producer is always in the ratio of his distance from the consumer, and that the remedy for all their evils, physical, moral, intellectual, and political, is to be found in bringing the loom and the anvil to the side of the plough and the harrow, thus making a market on the land for the products of the land.

ON THE PRESENCE, QUALITY, AND USES OF PEATS IN THE STATE OF MAINE.

The following very interesting letter shows that we were right in the persuasion that we might be opening up a subject of importance, especially to the New England States, where the temperature of the climate admits of the formation of *peat*.

For observations on the formation and action of peat, the reader is referred to Skinner's edition of Von Thaer's Principles of Agriculture (without which, there must be a large blank in every agricultural library), pages 171-273; also, and even more particularly, to Dana's Muck Manual.

Portland, February 11, 1850.

J. S. SKINNER, ESQ.

Dear Sir:—In the December number of your Magazine, you solicit information as to the extent and quality of the *peat beds* in our section of the Union.

Although not a practical agriculturist, I have given my attention more or less to this subject for a year past, and am satisfied that there are vast quantities of excellent peat in *Maine*, which would be of essential importance to agriculture here, if the requisite steps were taken to make known its fertilizing qualities. I am the better persuaded of this, after having read the article in your January number, respecting Mr. Jasper Rogers's experiments with *peat charcoal*. In this article, it seems to be fully proved that peat charcoal, aside from its fertilizing qualities, is a specific for the potato disease; and as the potato is one of the principal agricultural products of Maine, the subject deserves the particular attention of its citizens. I do not know that your magazine circulates very extensively in Maine, but I know that it ought to; and with the hope of exciting inquiry here as well as elsewhere, in regard to the matter of Mr. Rogers's inquiries, let me give you some account of the peat operations of two enlightened gentlemen of this section (Drs. J. D. Buzzell, and Geo. W. Smith), the which, as one of the Executive Committee of the Cumberland County Agricultural and Horticultural Society, I was specially called upon to examine last fall.

Some three or four years since, these gentlemen purchased, in the town of Cape Elizabeth, about six miles from Portland, a fresh water pond, covering an area of about 250 acres, having previously satisfied themselves that they could drain off the water, and that the soil thus to be reclaimed, if not underlaid by a bed of peat, would be of excellent quality for agricultural purposes. By means of a canal 230 rods in length, communicating with the ocean, the drainage was effected, and as handsome a field laid bare as ever tempted the eye of the agriculturist. However, before this field could be made available, it was found necessary to circumscribe it with a ditch to receive the waters from the uplands, which was accordingly done—the ditch being nearly three miles in length.

The soil thus reclaimed, for little more than a foot in depth, was found to be a mixture of decomposed peat, and other vegetable matter mixed with earth; and the whole rested upon a bed of peat, varying from ten to thirty feet in depth, which the Irish labourers pronounced to be equal, if not supe-

rior, in quality to any they had ever seen in their native island. Ninety acres of this land were planted with cranberry vines. These vines have not had time yet to come to full maturity, but at the time of my examination, many of them were laden with fruit of extraordinary size—the largest, indeed, I have ever seen. By way of experiment, likewise, about an acre was planted with strawberry vines, which, during a drouth last summer, which came near destroying the entire crops of this section, produced with wonderful abundance, most delicious fruit, and continued their produce for weeks after all other strawberries had disappeared from the market. You may form some judgment as to the quality of this fruit, from the fact that (while our common field berries were sold at from six to ten cents per quart), a fruit dealer here offered to purchase all that the proprietors could supply him with, at twenty cents per quart.

Experiments were tried also as to the effects of the soil or deposite, on the growth of potatoes on the uplands; and the result was most satisfactory. The field thus planted, even during the height of the drouth, looked as thrifty as any I ever saw; and being interested to know the result of the harvesting, I inquired, and ascertained that the produce was entirely free from rot, and most abundant. All this from peat in a *decomposed* state—when charred, I have no doubt (having read the article on the experiments of Mr. Rogers in your magazine), that it would be a much more powerful stimulant to vegetation.

But you say nothing about the *process of charring*, and all whom I have interrogated on the subject, are ignorant as to any particular method of so doing. Can you not in your next give such information as you have in this respect, so that those who are disposed may have an opportunity of experimenting with the article the coming spring?

In conclusion, let me add, that Drs. Buzzell and Smith have taken measures to introduce their peat into our market, as an article of fuel. They have invented a process for drying, by which it can be dried in twelve hours, whether dug in summer or winter, which process they are taking measures to have patented. Limited quantities sent to the Portland market last fall, were readily disposed of at \$5 per cord; and among other uses it has been found an excellent substitute for charcoal, in kindling hard coal fires.

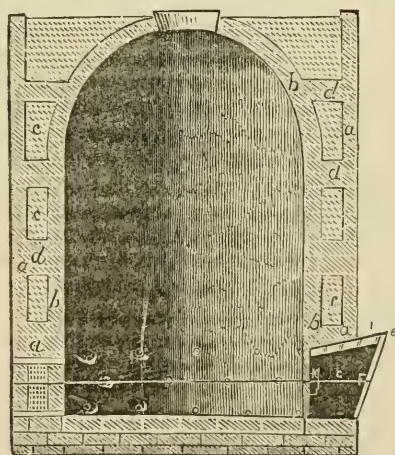
Very respectfully yours,
S. B. BECKETT.

The best description of the "*process of charring*," to which we can point our respected correspondent, is the following, which we extract from a volume we find in the Congressional Library—"KNAPP'S CHEMISTRY APPLIED TO THE ARTS," and to which our attention was kindly directed by Mr. DANA.

"OF THE PREPARATION OF PEAT CHARCOAL.—The charring of it is very much facilitated by two circumstances. The rectangular form of the peat bricks admit of their being piled up together, without leaving those interstices which is such a great objection in the wood-mound, and the lesser combustibility of peat charcoal renders such minute attention to the process unnecessary, and admits, with advantage, of the construction of heaps very much less in circumference. These consist generally of 700 to 1000 bricks; they are from 6 to 7 feet in diameter, and 4 feet high. Around the stake, which is driven into a dry place, the peat-bricks are arranged endwise in concentric series, forming circular layers, of which four, five, or six, with an internal decreasing diameter, are placed one above the other; with this precaution, however, that in all four directions, air-channels or passages, of the width of a brick, are left in the direction of the radius, by means of which the heat is afterwards regulated; otherwise the peat heat would be too closely

packed to allow any passage of air through its interstices. At the foot of the stake some dry wood is placed for ignition; the heap is covered with an inner coating of moss and leaves, and with an outer one of earth or charcoal dust, leaving only the middle part of the hood round the stake uncovered, for the purpose of setting fire to the heap by one of the passages. By opening and shutting these channels, the combustion is conducted in all directions, until flame breaks forth from the opening in the hood, which is then closed. The completion of the charring is then effected by apertures all round, beginning at the hood and proceeding foot by foot to the base. The appearance of the smoke issuing from these apertures is here also indication of the stage and state of the operation. The nature (age) of the peat, its consequent density, &c., must direct the burner. A mound, of the circumference stated, produced from not quite air-dried peat, 24 per cent. of the weight, and 27 of the bulk; from air-dried, 27 per cent. in weight, and $32\frac{1}{2}$ in volume; from freshly dug Pfungstadt peat, 30 per cent. in weight, and 29 in bulk; from excellent peat, quite dry, $35\frac{1}{2}$ of the weight, and 49 per cent. of the bulk. In the District of Siegen very good peat produced 23 per cent. of the weight, and 40 per cent. of the bulk. Experiments upon a small scale generally afford a still larger produce, sometimes as much as 40 per cent. of the weight. Much difficulty is attached to the drawing and quenching the peat charcoal, which are undertaken when the mound has cooled during a certain time, for the charcoal easily crumbles to powder, and is then useless.

In Furnaces.—The use of furnaces affords no increase of produce, but a safer regulation of the fire; and is more applicable to peat, as that substance is always obtained upon the same spot, and it is not necessary, as in the forest, to follow the charring or to transport the material. In the manufactory of arms at Obendorf, in Wirtemberg, there are charring furnaces which have stood the test of ten years' experience, and have been approved. Such a one is represented in Fig. 5. It is in the form of an upright cylinder, closed



at the top by a circular arch, 9 feet in height, and $5\frac{1}{2}$ feet in diameter; containing 189 cubic feet. The furnace itself *b*, is surrounded by a second wall *a a*, in such a manner as to leave a space *c c*, which is filled up to the dome with sand, as a bad conductor of heat. Both walls are of brick, each one singly is 15 inches thick, as is the space *c c*, so that the entire thickness of the walls is 45 inches. *d d* are stones, placed longitudinally and perpendicularly,

to give greater solidity to the walls. Above the sole of the furnace are three rows of draught-holes, pieces of old gun barrels walled in, which can be closed with bottle-stoppers. The door for drawing out the charcoal can be closed by the cast iron slab *f*. The iron support of the door projects slightly forward, and can be closed in the front by a board *e*, and the space *m* then filled with sand from *g*. On charging, a channel is left in the axis of the furnace for igniting the contents. In the beginning the charging aperture *i*, and the lower draught-holes are left open, and as soon as the heat appears white hot, they are closed, and the upper ones opened. When all smoke has ceased, all the apertures must be closed or filled with sand, and a layer of sand placed over *i*, about one foot in thickness; this occurs in about forty or forty-eight hours, and then the furnace is left during six or seven days to cool.

That no interruption may occur, ten such furnaces are worked at the same time. Peat charcoal, as far as heating power is concerned, ranks amongst the best kind of fuel; it possesses, however, at the same time, properties which render it unfit for many purposes. If 100 lbs. of peat have 21 lbs. of ash, and produce 47 lbs. of charcoal, these 47 lbs. of peat charcoal will contain 21 lbs. of ash, *i. e.* 45 p. c., which affect the processes in which it is employed, *c. g.* forging; partly on account of its quantity, and partly by entering into fusion, and acting chemically upon the bodies to be heated. As most kind of peats are rich in ash, this must be augmented to such an extent in the charcoal, as to render the greater number of them unfit for carbonization. Another great objection to peat charcoal, is its loose, brittle character, which causes it soon to fall to pieces, and become useless. In high smelting furnaces, the pressure of the layers of ore suffices to crush it; its application is, therefore, confined to open boilers and forge fires. This want of firmness has been found to render this charcoal quite unfit for removal, and the carbonization must be effected on the spot where the charcoal is used.

This exposition having already occupied as much space as can well be spared for the subject in this number, we must defer to our next some extracts from "DANA'S MUCK MANUAL," which we apprehend may be out of print, and of which, for the sake of that salutary spirit of inquiry which is abroad over the land, another edition cannot too soon appear.

The author says—"According to the experience of Mr. PHINNEY, of Lexington, an authority which may not be questioned" (and to which we may now add, one not to be referred to without mournful respect for his virtues and intelligence as a citizen and a farmer), "a cord of green dung converts twice its bulk of peat into a manure of equal value to itself—that is, a cord of clear stable dung, composted with two of peat, forms a manure of equal value to three cords of green dung." Professor Dana goes on to say—"Mr. George Robbins, of Watertown, is an extensive manufacturer of soap and candles, and of starch, and still better, a man who employs the refuse of these trades, in enriching and gladdening his lands. For four years, and it is believed his crops will compare with any of the best cultivators around him, he has not used a spoonful of manure, made by any animal walking either on two legs or on four. He keeps a large number of horses and hogs, and several cows; he uses not a shovelfull of their manure, but selling that, he uses *peat and swamp muck*, mixed with his spent barilla ashes. The proportions are one part of spent ashes, to three of peat, dug up in the fall, mixed in the spring. After shoveling two or three times, it is spread and ploughed in. The effect is immediate, and so far lasting. The effects of this spent ashes alone on sandy loam are excellent; it makes the whole quite 'salvy.'"

VON THAER says—"If peat dust has remained in heaps for a long time,

it may be used as a manure, without the addition of any mixture, and is peculiarly adapted for the amelioration of argillaceous and tenacious soils."

Professor Johnson, from whom we shall quote more fully when we revert to this subject in some subsequent number, says, "In the preparation of peat ashes for manure, two practical rules ought to be attended to :

"1. Not to burn the peat too far, or to a clean ash; if it be in a sufficiently fine powder, an entire half of the charcoal may be advantageously left.

"2. When burned, remove it under cover, or protect it from the action of the rains as quickly as possible, that the soluble salts, upon which so much of its virtue depends, may not be washed out of it. How often," he adds, "are wood and other ashes left in heaps upon a field, until the rains have exhausted them of nearly all of their most valuable ingredients?"

We might here dwell on the vast resources of swamp muck within the reach of those who live on the tide-water marshes of old Maryland, where our thoughts so often, and as it were involuntarily, carry us—but *cui bono*—to what end? Where people, sparsely settled, make only corn and wheat, and sell by the pound or bushel, against those in manufacturing States where there is demand for things that are sold by the *ton*, they can hardly afford the expense of hauling stable manure itself, a mile from the place of its origin or deposit. It's "population that makes the food come out of the ground," and it's diversity of employment that ensures population. When we asked the lamented and exemplary Phinney—"Sir, where do you find sale for your \$2000 worth of apples from this orchard?" What was his answer? "Have I not here at Lowell, close at hand, 30,000 mouths, hungry for all the fruit I can send them?"

Portland, March 12th, 1850.

THE accompanying box contains a sample of peat and peat-charcoal, manufactured from the same kind of peat. It was taken from the great pond in Cape Elizabeth, about six miles from this city.

I would give you some account of the premises if I had not understood that Mr. S. C. Beckett had already done it.

We have tried some experiments on a small scale to test the "deodorizing" power of the charcoal, and we find it to confirm all that Mr. Rogers and others have said of the Irish peat-charcoal.

As soon as the season is sufficiently advanced, we intend making further experiments as to its deodorizing powers, and to test it fully as to its properties as a fertilizer. Should these be as fully sustained by experiments as they have been as a deodorizer, it will be invaluable to the agriculturist and to the horticulturist.

We shall report to you, in the course of the ensuing season, the results of our experience.

Respectfully yours,

J. MERRILL, *Clerk.*

OSAGE ORANGE HEDGES.

The distance and mode of setting these plants in the row, says the Ohio Cultivator, is commonly six to seven inches apart in a single line. But where a very close hedge is desired, as around a garden or fruit yard, we prefer to set the plants in two rows, one foot apart, and the plants a foot apart in each row; those in one row opposite the vacancies in the other, thus—

* * * * *

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PRODUCTS AND PROSPECTS OF THE GREAT WEST.

VERY interesting expositions are always to be found in the Cincinnati Price Current, illustrative of the trade and growth of the great west—a great world in itself.

Speaking of the flux and reflux of currency from the west to California and back again, it says, among many other things that would be interesting to Atlantic readers—One express house in New York reports that out of 500 distinct remittances made through them, over 200 were to female relatives of absent diggers. The sums remitted, though severally small, are in the aggregate quite important, and as the precious metal finds its way into the channels of trade from the several homes of the adventurers, its effect upon business will be the same as if it had been produced in the United States.

Of the \$12,000,000 of California gold received in the United States up to this time, it is estimated that \$6,000,000 has come to different families scattered in the interior; and of this sum the west gets a fair proportion. So far, therefore, as the market has been affected by the withdrawal of currency for the supply of California emigrants, it will be fully relieved by the influx of the products of the mines.

The exports of breadstuffs from the United States to Great Britain and Ireland, from the 1st of September, 1849, to about the 1st instant, were as follows, compared with the exports same time last season:

	Flour, bbls.	Meal, bbls.	Wheat, bus.	Corn, bus
1848-49, . . .	726,979	61,034	956,419	6,751,514
1849-50, . . .	268,276	2,212	430,329	1,778,142
Deficiency, . .	458,703	58,822	526,090	4,973,372

From this it is evident that the United States is, this year, contributing but little to feed the operatives of England.

And then of iron, it says—

IRON.—The sales of pig have been confined to small lots, at \$25a26 for Ohio river hot blast, varying according to length of time and class of paper. Received during the week, 197 tons; since Sept. 1st, 1848, against 8901 same time last year.

Now, how obviously much better to be feeding here, in our own country, the hundreds of thousands employed in making iron for us in Europe.

§ **GRAIN.**—The market presents no new feature—Wheat is nominally 90a95c.; Corn is in good demand at 35a37c.; Oats 32 c.; Rye 80a90; Barley 75 to 95—including inferior and choice.

The following very interesting item is from the Cincinnati Chronicle and Atlas:—

GRAPE CULTURE.—Robert Buchanan, Esq. has published an interesting statistical article relative to the culture of the grape in this vicinity, from which we make the following extract:—

Some six months ago, the Cincinnati Horticultural Society appointed a committee, of which Dr. Mosher is chairman, to take a statistical account of the vineyards in this vicinity. The report is not yet completed, but the following estimate of the aggregate has been furnished, and is supposed to be nearly accurate, viz: Number of acres in vineyard culture within a circle of twenty miles round Cincinnati, 7743; under charge of 264 proprietors and tenants. Of this, Mr. Longworth owns 122½ acres, cultivated by 27 tenants.

At the low estimate of \$200 per acre for cost of planting, &c., this would amount to \$148,600 exclusive of the value of the land; and, when in full bearing, produce, at the most moderate estimate for a series of years (of 200 gallons to the acre), 148,000 gallons of wine annually; but in good seasons much more.

The number of acres now in bearing is a little over 340. The average distance apart in the rows, 3 by 6 feet, making 2400 plants to the acre.

The average product to the acre in 1848, was about 300 gallons, from near 280 acres then in bearing; and in 1849 (the worst year for rot yet known), about 100 gallons to the acre, from some 360 acres. New vineyards produced 200 to 250 gallons, but the old only 50 to 100; and the crops of a few were entirely destroyed by the rot.

Mr. A. Liggett, of Ripley, Ohio, has obligingly furnished the statistics of the vineyards in that neighbourhood. There are 73 acres planted, and 13 proprietors—about one-half the vines in bearing. The distance apart in the rows, 3 by 6 feet—the quantity of wine made in 1848 and 1849, about the same to the acre as in this vicinity, and the rot equally destructive.

According to this calculation, there are 816 acres in grape vine around Cincinnati and

Ripley. In a year or two there will be produced 244,800 gallons of wine from the vineyards, equivalent to about 8,000 barrels, and will constitute an item of about \$200,000 in the domestic business of the city. In 1840 there were 11,526 gallons of wine made in the State of Ohio, of which two-thirds were made in the county of Richland, and only about 2,000 in the county of Hamilton. It will thus be seen that the vineyards of this neighbourhood are the creation of the last ten years.

It is well settled that the *Catawba* is, on the whole, the best grape for cultivation yet tried in this vicinity. It is probable, too, that the hill sides, extending from a little below Cincinnati to Portsmouth, will be found the best region for the successful culture of the grape, to be obtained in the central states. We do not say that other sections will not do, but only that it combines the most advantages.

We are not of those who think that wine is not alcohol; for we know that it is to a large extent; but we also know that it is the weakest, and the least mischievous of the various forms of that (to the human body) most pernicious article.

✂ As many of our readers in various parts of the country are desirous of commencing the cultivation of the grape, the following from the pen of R. Buchanan, Esq., ex-president of the Cincinnati Horticultural Society, and published in Cist's Advertiser, will be interesting and valuable to them:—

CULTURE OF THE GRAPE.

CINCINNATI, Feb. 10, 1849.

DEAR SIR:—At your request, I now give you the mode adopted by myself, and some others in this vicinity, in cultivating the vine for wine making.

At the same time, I feel that it would come with greater propriety from Mr. Longworth, to whom, more than to any other man in the West, we are all indebted for our knowledge in grape culture.

Selecting and preparing the ground.—A hill side, with a southern aspect, is preferred. If the declivity is gentle, it can be drained by sodded, concave avenues; but, if too steep for that, it must be benched or terraced, which is more expensive.

In the autumn and winter, dig or trench the ground with a spade all over, two feet deep, turning the surface under. The ground will be mellowed by the frosts of winter.

Planting.—Lay off the ground in rows, three by six feet; put down a stick twelve or fifteen inches long, where each vine is to grow.

The avenues shall be ten feet wide, dividing the vineyard into squares of one hundred and twenty feet. Plant at each stick two cuttings, separated five or eight inches at the bottom of the hole, but joined at the top—throw a spadeful of rich vegetable mould into each hole, and let the top eye of the cutting be even with the surface of the ground, and, if the matter is dry, cover with half an inch of light earth.

The cuttings should be prepared for planting by burying them in the earth immediately after pruning from the vines in the spring; and, by the latter end of March or early in April, which is the right time for planting, the buds will be swelled so as to make them strike root with great certainty. Cut off close to the joint at the lower end, and about an inch in all above the upper.

Pruning.—The first year after planting, cut the vines down to a single eye (some leave two); the second, leave two or three; and the third, three or four. After the first year, a stake six and a half or seven feet long must be driven firmly down by each plant, to which the vines must be kept neatly tied with willow or straw as they grow. Late in February, or early in March, is the right time for spring pruning in this climate.

Summer pruning consists in breaking off the lateral sprouts and shoots, so as to leave two strong and thrifty canes or vines—one of which is to bear fruit the ensuing season, and the other to be cut down in spring pruning to a spur to produce new shoots. These may be let to run to the top of the stakes, and trained from one to the other, until the wood is matured, say in August or September, when the green ends may be broken off. One of these vines is selected next spring for bearing fruit, and cut down to four to six joints, and bent over and fastened to the stake in the form of a bow. The other is cut away, as well as the fruit bearing wood of the last year, leaving spurs to throw out new wood for the next, and thus keeping the vine down to within one and a half to two feet of the ground. Nip off the ends of the fruit bearing branches two or three joints beyond the bunches of grapes, but do not take off any leaves.

If both the cuttings grow take one up, or cut it off under ground, as but one vine should be left to each stake.

Culture.—The vineyard must be kept perfectly clean from weeds and grass, and hoed two or three times during the season. Keep the grass, in the avenues around, down

close. About every third year put in manure, by a trench the width of a spade, and three or four inches deep, just above and near each row; fill in with two or three inches of manure and cover up with earth.

Wine making.—Gather the grapes when very ripe, pick off the unsound and unripe berries. The bunches are then mashed in a mashing tub, or pressed through a small mill, breaking the skin but not the seed, and thrown into the press, and the screw applied until the skins are pressed dry.

Fermentation.—This process is very simple. The juice is put into clean casks in a cool cellar, and the casks filled within about four or five inches of the bung, and the bung put on loosely. The gas escapes, but the wine does not run over. In from two to four weeks, generally, the fermentation ceases, and the wine clears; then fill up the casks and tighten the bungs. In February or March, rack off into clear casks. In the spring, a moderate fermentation will again take place; after that, the wine fines itself, and is ready for bottling or barreling. Use no *brandy* or *sugar*, if the grapes are sound and well ripened. Keep bunged up or corked tight, and in a cool cellar, and the wine will improve by age for many years.

R. BUCHANAN.

MR. CHARLES CIST.

STATISTICS.

Cost of my vineyard of six acres—fourteen thousand four hundred vines:	
Trenching, two feet deep, \$65 per acre	\$390
Sodding avenues	60
Cost of 30,000 cuttings, at \$2 50 per thousand	75
Planting	70
Fourteen thousand five hundred locust stakes, at \$3 per hundred	435
Setting 14,500	55
	\$1,085
Cost of attending the first year—vine dresser \$216, and a hand for one month	
	\$231
Second year—vine dresser \$216, and a hand for two months, at \$15 per month	
	246
Cuttings after first year, to replace failures, say	20
Hauling, carting, &c.	68
Contingencies, &c.	150
Average cost, say \$300 per acre	\$1,800

The third year the vines will produce grapes enough to pay the expense of that year; generally more.

For the fourth year, and a series of eight or ten years in succession, the experience of the past would indicate the following calculation to be something like a fair one:

Say six acres, average 250 gallons, at rates heretofore, \$1 per gallon	\$1,500
Deduct cost of vine dresser per annum	\$240
Assistance, boeing, &c.	60
Gathering grapes, and pressing	150
	450
Net profit per annum	
	\$1,050

To attain this, the vineyard must be favourably situated, and well attended by a competent vine dresser, and free from the disastrous visitation of the rot.

Fine culture in this vicinity.—It is estimated that over three hundred acres are now planted with the vine, within a circuit twelve miles round Cincinnati; nearly two-thirds of which were in bearing last year, producing, notwithstanding the rot, so injurious to many, about 50,000 to 60,000 gallons of wine.

The Catawba is our *great* wine grape, and principally cultivated. The Isabella is not preferable for wine, and is only used for table use.

Mr. Longworth, with unwearied zeal and liberality, is still experimenting with new varieties, and may yet find a rival for the Catawba.

R. BUCHANAN.

MR. CHARLES CIST.

N. B. Some vineyards, in good seasons, have produced at the rate of 600 to 800 gallons to the acre; but this is rare. The usual yield is 300 to 400 gallons, where there is but

little rot. A bushel of grapes, if well ripened, will produce three and a half to four gallons of wine.

By proper economy, a man may have a vineyard of several acres in a few years, without feeling the expense to be burdensome. Commence by trenching one acre in the winter, and planting it out in the spring; next year another acre, and so on, for five or six years. After the first year, he will have his own cuttings from the first acre, and also grapes enough to pay for the cost of planting the succeeding additions to his vineyard.

If he has suitable timber on his own land, the stakes can be got out in the winter with but little outlay in money. By this course, the cost of a vineyard of six acres would not be half as much as mine.

Some prefer planting in rows, four by five—others, four and a half by four and a half; and, on level land, three and a half by six, or even seven feet.

I have merely given, in the foregoing remarks, the course pursued by myself and some of my neighbours, without pretending that it is preferable to others.

R. B.

A PRIZE CUP FOR POTATOES.

MR. DARIUS CLAGETT, of Washington, we are glad to see, has turned farmer as well as merchant, and the more certainly to succeed, has “settled” near, and taken as his fagleman the farmer of “Silver Spring,” distinguished over *the globe* for activity and success in that department; meaning to leave it with the reader to inquire—which? As straws show which way the wind blows, Mr. C. had evinced in his garden plot in Washington, a decided taste for planting, and budding, and pruning, and cultivating. But who can farm against men that have silver springs, or springs of silver? springs, that, moreover, in hot weather, seem to make spontaneous offerings of cool melons and cooler wine? But, *revenons à nos pommes de terre*. Mr. Clagett proposes in the *American Farmer*, aforesaid, as follows:—

“What I have to propose is, simply, that any number of persons, within the State of Maryland and the District of Columbia, may enter into competition, by a *cash* contribution of *one dollar* each, to be deposited with yourself, and any agents you may appoint, and to be expended in the purchase of plate, to be awarded (by a committee appointed for the purpose) *to him or her* who shall produce and exhibit, at the next agricultural fair, twenty-five of the largest potatoes—a description of the “modus operandi” of the preparing, planting, and growing of them, to accompany every sample exhibited; and *all* the surplus of potatoes (after the award) to be given to you for your trouble.

“I have now given you an outline of what I propose; and, if it meets with your approbation, the details of the same will be the subject of another letter.

“I, therefore, conclude this preface, by tendering you the compliments of the season, and wishing you the same success in your praiseworthy endeavours that attends those who read and digest the result of your labours.

“Very respectfully, your ob’t serv’t,

“D. CLAGETT.”

[We concur in Mr. Clagett’s proposition, and accept the agency proposed, but think he should extend the area of competition to the farmers of other States.—ED. A. F.]

We add, most respectfully, that we can’t say we do exactly “concur.”

We have no great opinion of giving encouragement to the system of forcing things into monstrous sizes, whether it be animal, fowl, or vegetable. And, besides, we have found that the largest potatoes are apt to be *hollow hearted!* and that is a quality of too common growth already in a certain district, where some men who in youth and prosperity were feasted, and courted; in age and poverty scarcely meet with the commonest “how d’ye do!”

We should think that the prize would lead to more useful experiments and results, if offered for the *best new variety of potatoes to be produced from the seed*.

On the utility of *this*, we have not room now to remark; but, we think we can promise some instruction from an honourable M. C. as to the process for obtaining new varieties in that way. It will, of course, be understood, that while we may be mistaken in our views—whether so or not, we none the less appreciate the zeal and good intentions of Mr. Clagett, whom we congratulate on becoming one of the “*hard fisted*.” Quite sure are we, that neither he nor his neighbour aforesaid, will ever belong to that other and very different fraternity, the “*close fisted!*”

GOOD CORN CROPS IN LORAIN COUNTY.

FRIEND BATEHAM.—I noticed in your paper of October 15th, an account of a large corn crop by John Eversole, of Perry county, viz.: one hundred and twenty-five bushels on one acre. I think Mr. Eversole has done well, but he has come short of what we have done on the Reserve this season.

I have raised this present season on one acre of sod ground, in round numbers, one hundred and fifty bushels, allowing three half bushels of ears to make one bushel of shelled corn. This crop of corn was raised on Black River bottom land; planted in rows three feet apart each way, with three stalks in a hill. And this is not the largest crop of corn raised this year on the Reserve. One of my neighbours, Pliney Jackson, raised on one acre of land one hundred and fifty-four bushels of corn, for which he drew the first premium at our county Fair, and I drew the second premium. If any one has beat this in the Buckeye State, we should like to hear of it.

Yours truly,

JOSEPH WORCESTER.

Pittsfield, Lorain County, O., Nov. 1849.

And we, too, "should like to hear" which is most needed for these good farmers in Ohio? Is it to be told how they can make, and to be singled out for the highest distinction an agricultural *society* has to bestow when a man does make, half a bushel more on an acre? *or*, do they need *laws*, that shall exclude from naked competition with them, those over-worked, poor half-starved wretches in Europe, who, with the product of their agricultural labour, supply with all their provisions and clothing, the men who are *there*, making cloth and iron, to be *consumed in Ohio*! See the Baltimore and Ohio Rail Road Company, sending to England for some 20 or 30,000 tons of railroad iron to connect the seaboard with *Ohio*! Now every ton of this iron may be said to be manufactured, in fact, almost exclusively out of *bread and meat*, not a particle of which was made in America! Nearly every dollar of the money paid to all the labourers employed in the manufacture of this iron, from the digging the ore to the finish of the rail, was expended for *food and clothing*. The profit goes to the English iron master, who can afford to live on former accumulations from his immense capital, if the American government will only aid him, by its low and its ad valorem duties, in thoroughly breaking down the iron establishments in the United States. That once done, and thereafter, the English manufacturer can *charge his own prices*, because iron founderies are not to be built up in a day. They require much capital that men will not risk again and again, after having seen so many ruined by the faithless and fluctuating policy of their own government, making the duty low when the price is low, and high when the price is highest, thus legislating against, instead of for, the American manufacturer. For what use were the bowels of the Alleghany mountains (unfitted for culture) filled, by the hand of God, with coal and iron? Did he intend that it should not be used, unless it could be done in successful competition with the miserable labourers of Europe, where the poorhouses are filled at an annual cost to the people of \$30,000,000 of taxes a year, to barely save the lives of men, women, and children, who can't get work at a shilling a-day? Was it in this way that Providence designed our country should be blessed by these magnificent and unlimited deposits of coal and iron? No, No! The Ohio farmer, who already knows, as it is seen here, how to make 150 bushels of corn on an acre of land, needs now to be taught something more. He needs now to be rescued out of the hands of demagogues, he needs now to have the *party* spectacles (in which we may all be said to be born in this country), stripped from his face, and to be told to hold up his head like a man; to inquire and to think independently for himself until he solves the question not, how shall we make more, but how shall we bring the prosperous customers close around us to demand what we do make, with ability to pay for it! How

shall we realize the advice of Jefferson, to "place the manufacturer by the side of the agriculturist?"

That is what every farmer in the Union needs now to know, and that is to be done, by taking this question out of the *party ring* and viewing it as a *national question*, one between England and the United States—in fact, a question of *national independence*! Independence did we write? We shall never be truly independent until a national determination is formed, and carried out in the legislation of the country, never to import a yard of cloth, or a pound of iron, or anything else for which our country abounds in the natural resources. We must determine that he who manufactures cloth and iron for the American farmer, shall eat the American farmer's corn and beef, and weave the American farmer's wool. Do that and he will be sure to find out how best to produce the beef, and corn, and wool.

HUSSEY'S REAPING MACHINE.

A FEW days since, the first twenty miles of the road from Baltimore to Philadelphia was very agreeably beguiled and shortened in the perusal of the March number of the old father of agricultural journals, the AMERICAN FARMER. Were we to eviscerate and divest it of all that is worthy of notice, we should leave not even the outside skin, for we ought to venerate even that. How well we remember the suggestion for the motto, at a hospitable Irishman's always lively dinner-table, in Baltimore, by an Irish clergyman,

"As jolly an old soul

As e'er crack'd a bottle or fathom'd a bowl."

We were glad to see, in the number referred to, the following. By transferring it to our columns, we seek to do service to a man more worthy of honour for this invention than many a man who has received public honours and rewards, and the "privilege" of the Senate chamber.

"HUSSEY'S REAPING AND MOWING MACHINE.—We call attention to the advertisement of our fellow townsman, Mr. Hussey, who is now ready to receive and execute orders for his Reaping and Mowing Machine. We *may* be biassed in our judgment in behalf of this invention of our friend Hussey, but we think we may with full confidence say, that from all the evidences which have come under our observation, it is a superior machine to everything of the kind that has ever been presented to the public."

QUINOA PLANT.

"To the Editor of the Plough, Loom, and Anvil.

"SIR—As I believe it to be your object to introduce to the notice of your readers, all improvements likely to promote the interest of the labourers in the several departments to which your periodical is devoted, I beg leave to mention a plant not hitherto generally introduced into the 'States.' I mean the Quinoa plant (*Chenopodium Quinoa*). It belongs to that celebrated tribe of which the Beets are familiar representatives, but unlike these, its utility depends on its seeds rather than roots. The seeds are white, smooth and round, not unlike the Sago in appearance, and when carefully cooked produce a very nutritious aliment, delicate and wholesome. It is used as a common article of food in Peru (Lindl. Veg. Kingdom). I understand this plant has been already introduced at Baltimore as a crop. I have myself seen it in cultivation in Europe, where it was introduced as a probable substitute for the potato, at the time when that essential root exhibited proofs of decay. I enclose a small quantity of seed grown in the Royal Dublin Society's Garden, Glasnevin, Ireland, in latitude 51°. If you are familiar with the plant, of course these remarks are unnecessary; if not, I will be ready at any time to furnish more minute details as to its use and culture. Should any one wish to try it, I have every reason to suppose that seeds may be procured from your friend R. Buist, Philadelphia, who generally introduces such things to notice.—HORTONVILLE.

"Philadelphia, March 21st, 1850."

We should be glad to have further information, and in the mean time, have sent the seed to Mr. Colt, Roswell House, Paterson, N. J., where it is sure of careful attention.

HOW FREE TRADE, RECOMMENDED TO AMERICAN FARMERS, WORKS IN ENGLAND.—In the year 1834, the county rate of taxes in Lancashire, England, was 6 cents on the \$5 upon an assessment of \$20,000,000—now it is 16 cents on the \$5 upon an assessment of \$30,000,000!

HOW TO MAKE A MARKET ON THE LAND FOR THE PRODUCTS OF THE LAND.

THE great object we have in view, is that of teaching the farmers and planters of the Union, how to give value to *their own* labour and *their own* land, and thus to become rich, instead of remaining poor. The process by which all this is accomplished in New England is so simple, and is so well described in the following account* of the rise and progress of one of their manufacturing villages, that we cannot omit the opportunity to present it to the view of southern and western readers, in the hope that it may tend to influence them to "go and do likewise."

About a dozen years ago, in an adjoining town, a young man about twenty years of age, got it in his head that he could make a power loom for weaving coach lace. He had no money, but his brother, a year or two older, who was an operative in a small factory in the neighbourhood, had accumulated a few hundred dollars, and having full faith in his brother's genius, lent his assistance. The young man succeeded with his loom. People came to look at it, and saw that it was good. Boston merchants and capitalists came, and saw that it would pay, and they took stock in it. The young man, encouraged by success, and having his faculties sharpened by exercise, went to work upon a loom for weaving figured counterpanes. This succeeded also. Next he tried his hand at an ingrain carpet loom. That went to Lowell, and consequently, did not help to build up this place (except, inasmuch as it increased confidence in his abilities), although it is making employment for a thousand persons there. Afterwards he got up a gingham loom, which was equally successful. Well, he determined that his machines should be operated here. Capital was ready to pay the bills, for it saw a prospect of large returns, and this man and his brother, the operative, went to work. They built a machine shop in order that their work might be done under their own inspection; then they built machinery and put up mills; and within the last six years, nearly two millions have been invested here under their direction. A village of three thousand inhabitants has sprung up, in the midst of what was a few years ago, woods and barren sheep pastures. But how? As soon as it was known that work was to be done here, and money paid for it, Yankee enterprise straightway pricks up its ears and starts. The carpenters, bricklayers, stone masons, iron founders, machinists, flock in. In their train follow tailors, shoemakers, butchers, bakers, and shop keepers. Some are young and poor, just commencing business, others are older and have got a thousand or two of dollars. But they can do better here than at home. Those who have children of a suitable age, put them at work in the mills, as places occur for them, a portion of the year. Then the farmers all about the neighbourhood—the citizens who do not come themselves—the doctors, lawyers, and ministers, even—find their girls and boys have got the factory fever. The wages are so good—and paid every four or five weeks, too—sisters, cousins, acquaintances are going—if they shouldn't happen to like it they can go home again—in short, they *must* go to the factory, and will! Occasionally, some of the parents, who are not getting along quite as well as they wish, come over to see what the prospect is. They find "it's handy to meetin'" (we have three or four churches), "schoolin's so much better'n 'tis up our way" (we have five or six schools, primary, grammar, and high), that they determine they will move to the factory village and take a boarding house, so as to be with their children and enjoy the advantages of a larger community. The persons who came first, meantime, are getting rich, and men of note. They are being elected representatives, selectmen, or filling other respectable stations—but they see no impropriety in their children spending a portion of their time in the factory. They send them to school three, six or nine months in the year, and the remainder of the time keep them at work. The young folks much prefer the mill to the work about the house at home. Their brothers, cousins, lovers, friends or acquaintances, are their overseers, and their fellow operatives are of the same character. And thus our factory village springs up, and thus its mills are filled—a large proportion of the operatives, however, always belonging to homes in the neighbouring towns or states, whence they come to spend a year or two in the mill and then return to marry some early acquaintance, or marrying at the village, establish themselves in a new home.

* From a letter by Mr. C. W. Blanchard, of Clintonville Mass., in reply to one addressed to him by the Hon. Mr. Clemens, Senator from Alabama.

For "The Plough, Loom, and Anvil."

SINCE we appeared before the readers of "The Plough, Loom, and Anvil," the weather has, in this quarter, been inoperative for the farmer, although considerable ploughing has been done. Early potatoes and some oat crops have been put in.

The gardener has been busy putting in his first crop of radishes, now above ground; onions are both sown and planted; early beets and peas vegetating; cabbage and lettuces planted out, and orchards have been laid out and filled with fruit trees; some of them left to be blown about at the mercy of the elements; whilst the careful and considerate have tied them to stakes. We have planted a pear orchard, or, at least, one hundred and fifty trees, and feel satisfied, if we be spared six months, we may eat the fruit thereof. We also planted, along one of our naked fences, one quarter of a mile long, a collection of apple trees, going in fully for some one to eat the fruit thereof; and, before the month closes, we shall have covered another fence with grape vines.

In gardening, it is all important to plant and sow early. Where our hints, last month, have not been attended to, delay no longer to do so. Early vegetables for your family and friends, is a boon admitted by all. The season will now admit of sowing early horn carrots, Mohawk and Valentine beans. Sow drumhead cabbage, to grow for *cold-slaugh*; red Dutch for pickling, and large York or sugar-loaf for summer use. Prepare ground for a full sowing of carrots, both for garden and field culture; sow celery for a late crop; plant long green cucumbers towards the end of the month, cover them at night with a box, glass, or litter; sow beds of lettuce and endive, onions, and parsley. A pound of onion-seed will cost \$1 75, and will produce two bushels sets, which, sold in market at twenty cents per quart, will bring over \$12, and will not cost in labour and land over \$2 50. Where there are no onion sets, sow a portion of the seed very thin, say one inch apart; manure well and you will have large onions. The first season, sow yellow and white summer radishes in rows nine inches apart, and round spinach fifteen inches from row to row. Do not fail to be forwarding your tomato plants by every possible protection. Egg plants must now be sown, if not already done; dig a pit in the ground eighteen inches deep and three by six feet, put therein a load of warm manure, so as to be a few inches below the surface; lay thereon six inches of fine soil, sow the seed, cover it at night with boards, mats, straw, or hay, which will protect and bring both tomatoes and egg plants forward rapidly. Prepare poles for running beans, and be sure you have the *genuine Lima*, which has no rival!

Flowers—those cheerful and intellectual companions of country life, must not be overlooked; a few cents, spent in seed, will afford a treat during the entire season. Sow *German Asters*, *Sweet Alyssum*, *Balsams*, *Cacalia* (*Ladies' Paint Brush*), *Campanula* *Clarkia*, *Centaurea*, *Convolvulus*, *Calliopsis*, *Chinese and Spanish Pink* *Gilia*, *Candytuft*, *Cypress Vine* (red and white), *Malope*. German stocks, *Nemophila*, *Wood Nymph*, *Spanish Nigella*, *Petunias*, *Red and White Drummonds*, *Phlox Schizanthus*, *Red, White, and Yellow Portulacas*, *Rocket Larkspur*, *Thunbergia*, *Viscaria*, *French Marygold*, and *Tinias*—to which may be added for curiosity, *Ice and Sensitive plants*—these are flowers for the *million*, and last one year only. The following are of a more permanent character, and last from year to year—as *Campanula*, *Chelone*, *Chrysanthemum*, *Delphinium*, *Dragon's head* (*Dracoccephalum*), *Day Lily*, *Blue, White, and Yellow Lilies*, *Phlox* (red, white, and striped), *Pæonias* of all colours, *Pentstemons*, *Rudbeckias*, *Spiræas*, and *Speed wells* (*Veronica*), all very desirable, and can be bought for a shilling a plant at the nursery. Now is the time to plant, and delay not!

Fruit Garden.—We consider March and April the best months in the year for planting—*Strawberries*, choose *Boston Pine*, *Early May*, *Black Prince*, *Iowa*, *Hudson*, *Bean Pine*, and *Victoria*; these, when planted in the vicinity of each other, will produce great crops, and continue a month in bearing; good, deep, rich soil is their delight; plant in rows nine inches apart from plant to plant, and eighteen inches from row to row. Take a thin crop of lettuce and radish from the same ground, as the vines will make little progress till September. I must now urge upon the farmer the all-important subject of sowing a large breadth of roots for stock in winter. Plenty of carrots, turnips, and parsnips for our cattle in winter and spring, cannot be overvalued. We finished feeding our common turnips in December; our carrots in January; Swedes in February and March, till now, 20th, we have had just hauled in from ground, a supply of parsnips, which will last till grass is fully up. We do not admit that the milk pail can be filled, or cattle kept in order upon corn fodder or dry hay. There are several kinds of carrots and parsnips; for the former, we prefer the *Altringham* and *white Belgian*, and of the latter, the *large field sugar parsnip*. These yield the greatest weight per acre.

AN APPEAL TO THE AGRICULTURISTS OF THE MIDDLE ATLANTIC STATES.

THIS is an eloquent and patriotic appeal, published originally in the *National Intelligencer*, and since then in the *American Farmer*, and otherwise widely disseminated; from the pen, we presume, of the chairman of the committee, consisting of CHAUNCEY P. HOLCOMB, of Delaware; A. BOWIE DAVIS, of Maryland; BERNARD PEYTON, of Virginia; FREDERICK WATTS, of Pennsylvania; AARON ROBERTSON, of New Jersey; and J. H. BRADLEY, of the District of Columbia, all "good men and true," appointed, by the *Maryland State Agricultural Society*, at its late anniversary meeting, "to address those of their fellow-citizens connected with agriculture in the States of Pennsylvania, New Jersey, Delaware, Maryland, Virginia, and North Carolina, on the importance of becoming members of this society, and holding great annual agricultural exhibitions at the city of Baltimore, at which this large central district shall be represented."

To use the emphatic language of the editor of the *American Farmer*, we "indulge the fond hope, that its adjurations may light up a zeal and interest among the husbandmen in the several commonwealths appealed to, that will show, when yeomen strike for a good and a holy cause, that that cause must prosper." But, be it sorrowfully confessed, our hope is not very sanguine. We have lived too long, and witnessed rather too many paroxysms of this sort, in favour of general improvement of the condition of agriculturists, while the aggregate result has been aggregate deterioration, to have very strong faith now, in the permanent effects of such experiments, we going on all the while importing from abroad, the great staples of our country, embodied in manufactures wrought abroad, out of materials so superabounding among ourselves; and may we not say, especially in Pennsylvania, New Jersey, Delaware, Maryland, Virginia, and North Carolina; wrought, too, by the labour of men who have to choose, on a Sabbath day (the only day they taste either), between a small morsel of meat, or a smaller morsel of butter, "fit only to grease cart wheels."

Judging from the nature of the proposed remedies, it often seems to us, that farmers mistake the nature of their complaint; which is, not deficiency of production, but *deficiency of demand* for what we do, or very well know how to make, when the market is sure, and the price remunerative. Until the government shall take measures to diversify labour, and concentrate population, all increase in the weight of animals, and the measure of crops, must be attended with corresponding diminution in the value of these staples. But once establish on the *assurance of ample remuneration* (its only sure foundation), the *will* to improve, and the *way* to do it, will certainly be found out: it will open of itself, just as naturally as broad daylight succeeds to the morning's dawn.

The question is, when these gentlemen come together from Maryland, and Virginia, and the Old North State, and have the genuine root of the evil exposed, will they grapple with it, and take measures to protect and encourage the growth and manufacture of our own wool, and coal and timber, and iron? Have they not laid upon the table, in the Maryland Agricultural Society, a simple, tame, humble expression of opinion, that, while Congress is appropriating *their money* for instruction in the use of the cannon and the sword, they might give at least an equal amount for instruction in the use of the plough? Have they not? We ask again—have they not declined to express an opinion on so clear a proposition as that?

As long as farmers are content with *being permitted* to associate, and on that, giving a receipt for all further claims on the care and patronage of government, they will be graciously allowed to form societies—nay more—they may get as many "acts of incorporation" as they will take the trouble to draw up. No! friends of agriculture; what is needed, is *protection to American labour, in every form and department of industry for which we have the elements and resources*: and further—to have a portion of the many millions now given to war, and preparations for war, appropriated to sowing the best of all means of national defence—that is, to *sowing the seeds of knowledge in the minds of the rising generation of farmers*. It is to that you must make up your minds, if you want permanent improvement and permanent peace. But we may be wrong. We may have been more than thirty years studying the foundations of agricultural prosperity to no purpose. Yes, *we may have been!*

APATHY CHARACTERISTIC OF AGRICULTURISTS AS A CLASS—PROOFS OF IT.

OPPORTUNITY such as, we may say, without presumption, few have enjoyed, for so long a time—consisting of nearly a third of a century that we have held extensive communion with the *cultivators of the soil*, devoting all the while, our time and faculties with

instinctive anxiety to their welfare—has enabled us to judge, so far as we have capacity to judge correctly, of their habits and character *as a class*; and with shame and regret be it acknowledged, that of all industrial classes, we are forced to regard the agriculturists of the United States as the most inert—the hardest to excite, and the most difficult to keep excited, in matters that *most deeply concern themselves*.

Of this mortifying truth, many proofs might be given, though there needs none more striking, nor to them more derogatory, than the tameness with which they have, during the whole existence of this government, allowed themselves to be fleeced, to the tune altogether of some \$600,000,000 for military establishments and the diffusion of military instruction, while they have not had the spirit to demand the establishment of academies and schools in the States, for agricultural purposes, like the military and naval academies and schools, maintained at their cost for the purposes of war!

Several times, in years past, we have been at the trouble and expense, individually, of having memorials printed and circulated, to be signed by farmers in Maryland, which only went, very tamely, the length of asking the Legislature to represent to Congress, that when public money *should* be appropriated for military education, at least an equal amount should be applied to agricultural instruction. Well, though these memorials were widely distributed, only one or two would take the trouble even to get them signed and sent in, though all admitted the principle to be right, and then they found their way to some old pigeon hole of a committee room, to be soon covered, along with memorials against sheep killing dogs, with dust and cobwebs; and not a farmer ever asked his delegate what was done in the case! On another occasion, we had the presumption, some years since, humbly to memorialize Congress ourselves on behalf of the agricultural interest, to the same effect. It was presented with a flattering and impressive appeal to the Senate of the United States, by the present distinguished law officer of the government, and after discussion, decided, that it could not properly be referred to any but the *Agricultural Committee*—but that committee, sitting on what may well be called the backbone of our whole system of national industry, held not *one meeting during the Session!* nor has any farmer of the Union ever felt interest enough, or one of the many papers which ought to be regarded as indexes of public opinion, ever thought it worth while to inquire—Why is it, that while Congress is so easily excited about other things and so ready to run into every clap-trap—so ready and even eager to lavish the people's money on everything that smells of powder and of blood—not a dollar is given directly, nor the least regard manifested for *the cause and the interests of the plough!* the great instrument of national prosperity and power! the instrument which supplies the material of every industry—the bread for every mouth? To come back to bodies and spheres of action more limited. In Maryland, in good weather, in a populous and central city, where farmers all have business at any rate, you can get up a “big meeting” once a year, and then, *what a deal of tall talking!* Well! being present at one of these meetings, we thought we would venture quietly to put some balls in motion that we well knew *ought* to be kept rolling until practical results should be achieved; that is, if there was anything solid—anything available—in the show of zeal which becomes apparent and seems every autumn to promise a fruitful harvest. If, in a word, it was not a mere spasmodic effort—one of those lively paroxysms of good intention, that effervesces like sparkling champagne, and as soon goes off in froth. Accordingly, we made a suggestion about remedies against the *curse of sheep-killing dogs*, as the only bar in Maryland, and Virginia, and other southern States, to the prosecution of a branch of husbandry, by which the landholders of Maryland might easily realize a clear revenue of \$200,000 a-year, over their present income. “Aye,” said every one. It was agreed on all hands—the impression was unanimous—that the subject deserved immediate and serious attention. A committee of inquiry made an able report on the matter. The Legislature was to be memorialized to lay a tax on dogs, and otherwise contribute by legal exactments, to the abatement of a vile, disreputable, and ruinous grievance. Well, the Legislature has had its biennial session, and is not to come together again for two long years. But—*was anything done?* A most respectable committee, even the President of the State Agricultural Society, a host in himself, was appointed to urge that and other measures; but, we ask again, *was anything done?* No! And will any member ever be called on to answer for his delinquency? No! For well they knew, that their constituents would never make them amenable for any neglect, unless it should be neglect of the *interests of the party to which they belong!* unless it should be for some oversight, some want of sharpness and tact in looking out for the *interests of the party!!* Party! party! party! power! power! power! spoils! spoils! spoils! The question is, not whether a legislator has talents to comprehend and manliness to go first of all things for the true interests of agriculture; but whether he has sagacity to contrive or quick discernment to discover and avoid a political clap-trap! and thus each party dreads to approach an acknowledged and enormous evil to which we have referred, for fear of a *cat in the meal tub!*

Well, we shall now turn to another proof, as if proof were wanting, of the truth of the position with which we set out, that of all classes that go to make up this busy and fleeting world of people, the tillers of the soil are the hardest to be moved and kept alive as to what peculiarly and vitally concerns themselves. But, reader, do not suppose we have any pleasure in the task. For us it is full of mortification, and would be esteemed worse than superfluous, if we did not design at last to attempt to look into the cause of the malady and the cure for it. That will be done, then, before the subject is finally relinquished. In the mean time let us turn to another proof of lamentable supineness characteristic of the class for whose welfare we have been exerting our best faculties all our life.

AVERAGE ACREABLE PRODUCE OF MARYLAND.

WE had seen in the Patent Office Report for 1848, an estimate of the average acreable produce of great staple crops, founded on the best information the commissioners could obtain, and doubtless with an earnest desire to approach the truth as near as possible.

Looking at Maryland in that estimate the average is put down, *wheat at 6 bushels to the acre; oats, 10; rye, 5; potatoes, 100; and as to Indian corn*—as another evidence of the sensibility and aptitude of farmers to heed every attempt to illustrate and improve their condition—the commissioner seems not to have been able to procure *any returns whatever from Maryland*, on which he could base an estimate. Well;—being perfectly satisfied that if such were the average products per acre, in the three grains mentioned, the average tendency of all engaged in their culture in our old native State must be to rapid ruin, so far as these crops enter into their means of living; we thought we would make a more particular attempt to come at the real state of the case in each county; and took measures accordingly, such as one might suppose could not possibly fail where there was the *smallest spark of public spirit* among the farming community, in regard to the concern which constitutes the sole business of their lives, except *party*; and this is the plan we adopted. A table was formed, and several hundred printed, which left the respondent nothing under heaven to do, but to take his pen or pencil, and, as he sat at his table, fill up with figures his rough estimate or supposition of the *probable average* yield per acre in *bushels of wheat, rye, oats, barley, buckwheat, field peas, and turnips, potatoes, and indian corn, in pounds of hay and tobacco*; and the average *quarts of milk* through the season; with his opinion of the *average time of each cow at the pail in the year*; so that an estimate might be formed from these two facts, what is the *probable average yield per year, of cows, in milk or butter, in the several counties of Maryland*.

Well, we knew that there was no barley of any account; not much buckwheat, and but few field-peas, or potatoes, or turnips, raised as *field crops*. It was not in ignorance of these facts that they were embraced in the tables, but we wanted to have the facts of their constituting little or none of the resources of Maryland husbandry, to be *thus established*; leaving open the consideration, whether they might, or not, be profitably introduced. Many other subjects might have been well included, such as sheep, wool, sheep killed by dogs, &c. But we too well knew who we had to deal with; men generally as unsurpassed in intelligence as they are in *vis inertia*. We therefore desired to confine the inquiry to a *very few leading objects*, and to make the table as simple as possible, requiring not one word to be *written*, but the ready ruled columns merely to be filled in with figures, after five minutes' reflection, with pen or pencil, as the farmer might be sitting where he would open the letter.

Along with these tables, on the same sheet, was the following printed letter in the way of persuasion and reconciliation to take even that little trouble for public enlightenment, as to the real condition of the agriculture of Maryland in relation to the primary crops to which they look for all that they work for, and live upon.

Washington, D. C., ———, 1850.

DEAR SIR—This application is made to you, respectfully, in the persuasion that the interest you are known to take in all that concerns agriculture, will prompt you to fill up the blanks and return it to me, under cover to your Representative at Washington.

I am aware that your estimate must necessarily be a conjectural one; but I know as well, that it will be impartial and candid. From it and others, from all parts of the State, a general one may be formed, as reliable as can be had except by public means and authority—of the average acreable products, &c. of the State.

I need hardly assure you, that the general results to be thus obtained, are intended only for better information as to the real condition of your agriculture. Please mail your answer within a week, and let it be addressed to

Yours very respectfully,

J. S. SKINNER,

Editor of "*The Plough, the Loom, and the Anvil*,"
now at Washington.

To the accomplishment of the object in view it was obviously proper to address these appeals, to some prominent individual in each election district, in each county, distinguished, or supposed to be in advance among his neighbours, not in zeal alone, or judgment alone, but for such a combination of public spirit and intelligence as would warrant the hope that he would at least take the trouble, which he could do in ten minutes as well as in seven years, *to fill up these blanks with his "conjectural estimate," refold the letter and send it by first conveyance to the post office.* Care was taken to have it so conveyed to each, that not even five cents postage should accrue on it.

The next thing was to *find the men*—clever, civil, intelligent, public spirited friends of the cause—even one in an election district—cordially despising the thought of inquiring or caring to what *party* he might belong! Happily, the State Society was in session in Baltimore. All was animation; every one was boiling over with zeal in the good cause; the plan of coming at the truth was approved and deemed as infallible as any plan could be. Such estimates periodically would tell whether the State was moving ahead or falling astern. The members of the State Society then present gave the names of persons *they were sure* would gladly respond in their respective counties. Oh yes, not a doubt of it. Some of them consented to have their own names put on the list; and these letters, with their blank forms attached, were accordingly forwarded to some prominent and active friend of the cause, or supposed to be such, in *every election district in Maryland*—not less, we suppose, than one hundred at least.

Now then, what does the reader suppose was the result of this well meant and to us laborious and expensive attempt to come at the real condition of Maryland agriculture, the products of its labour, and the yield of its capital embarked in the cultivation of the soil? Why, instead of a return, as might have been expected, from each election district in each county, from which to strike the average for the county, up to this time we have from Washington county three returns, from Somerset one, Carroll one, St. Mary's one, Frederick seven, Alleghany three, Cecil two, Talbot one, Worcester two, Montgomery one, Prince George's two, Baltimore county two, Anne Arundel, Charles, Caroline, Dorset, Queen Anne's, Kent, and Calvert ———!

In our next we shall add such as may then, if any, have been received, with some view of the result, partial as are the means. In the mean time we note that the first return received was from that thoughtful and enlightened friend of the cause, Mr. W. W. Bowie, of Prince George's.

ON THE PREPARATION OF HEMP AND FLAX FOR MANUFACTURE.

NOT knowing which, if either, of the following letters from Mr. Anderson, was intended to be reserved, we think it best to publish both. The subject is one of deep interest. The capabilities of the country for producing these articles are so extensive and rich, and the commodities themselves are of so much national importance—especially hemp, in its relation to our maritime interests, that we shall not let it go, until we have come to the bottom of it: to see how it is, that we should be sending abroad for sail cloth as well as other cloth—and iron. For ourselves we are satisfied, as we have before said, that if it could be examined without prejudice—if we were to consult and follow the true interests of the United States, in regard to our supplies of sail cloth and iron, we would look to our own means and resources; instead of looking for advice to Sir HENRY LYTTON BULWER, her Britannic Majesty's minister at Washington, or to Mr. BROWN, "of Richmond Hill, near Liverpool," M. P., who has amassed his millions by his profits as an exchanger, between the American producer and the English manufacturer, in pursuance of the policy which he recommends in his letter to Mr. Meredith, and which we have continued to follow, with little intermission, from the days of our Colonial dependence to the present hour, being still as then, as General Jackson said—"subject to the policy of British merchants."

In a letter from a manufacturer of sail duck, a political friend of the late administration, he says, under date of the 22d ult.

"The poor domestic men are utterly irrevocably ruined by Mr. Walker's tariff, and after thirty years I am endeavouring to save from the wreck enough to subsist on during

the remainder of my life. My children I have taught to adventure nothing which the legislation of county court lawyers can affect. It is of no use to write or talk about hemp or flax, unless you can create consumers. The [American] manufacture being destroyed, it is of no use to have growers."

Louisville, 11th March, 1850.

JNO. S. SKINNER, Esq.

DEAR SIR:—I acknowledge receipt of your letter 2d March, and regret that I cannot give you in this communication such a description of the new hemp brake, as would render it intelligible to the readers of "The Plough, Loom, and Anvil." Let it suffice for the present, in saying, that the main machine has been in operation and comes up to my expectations. I have had, and have seen many hemp machines, in operation, but without any good results. My present machine embraces every principle of the hand brake, and performs, by the peculiar arrangement of its several actions, every motion of the operator on the hand brake. I am now making some changes in the machine, with a view of cheapening it, that every farmer disposed to produce a better quality of hemp than any heretofore in market, may avail himself of its use. There is no doubt but that hemp, as hitherto prepared, had commenced its decomposition previous to its manufacture into cordage, hence its rapid decay when exposed to a warm and moist atmosphere. With the aid of the new machine, I can prepare hemp for market with half the exposure, to either water or the atmosphere, that has been heretofore observed.

I could give you a full description of the process for the preparation of hemp for naval purposes, but as I am just on the point of departure for St. Louis, I must delay it to a more suitable moment.

You can see in the Patent Office a working model of my new machine. You would oblige me by calling and examining it. It answers as well for flax as hemp, and acts better on hemp and flax half rotted, than it does on dew rotted or over rotted hemp.

Yours, very respectfully,

JAMES ANDERSON.

Louisville, 11th March, 1850.

I have a few moments to spare, and will occupy them in giving you a rough and rapid description of the only process, in my opinion, for the preparation of hemp and flax, for naval purposes.

To give durability and strength to hemp and flax, it is absolutely necessary to avoid fermentation; that fermentation will take place, from undue steeping in water, is manifest, from the bad odour arising from every vat or pool in which hemp or flax is cured, and must be avoided. Every chemist is now compelled to acknowledge that fermentation is the beginning of decay, and surely the government do not want an article, on which so much is dependent, that has commenced decaying previous to its being brought into use, especially when it is known that decaying vegetable matter has the process hastened by exposure to heat and moisture.

It has heretofore been necessary to over-rot hemp to enable the operator to brake and clean on the hand brake; hence the necessity of a machine that will operate for the removal of the wood before the harl, or, if you please, the fibre, has been impaired. My machine will do that and do it better than if the article had been over-rotted; this has been exemplified in every experiment, and can be easily explained to an experienced hemp or flax grower.

For the purpose of coagulating the albumen (which exists in all vegetable matter, and in large quantities in hemp), and to render it insoluble, it is necessary to carry it through a heating process that will not generate fermentation—that can be effected by inundating the hemp in a tight vat and allowing the water to remain until every strand of the hemp is saturated, say for a period of twelve hours, then withdraw the water and let the hemp remain in the vat until the natural heat (which will surely generate), has so far penetrated as to cause the cuticle to slough off; it is then ready for a second inundation, and may so remain for months without fear of fermentation or decay—surely if it will not decay in the vat it will not do so readily in cordage—the article so produced presents an oily appearance, and differs from any hemp I have ever seen. Hemp thus prepared cannot be cleaned by the hand brake, but is operated on by my machine, with great facility. Flax so prepared would be as strong as silk.

In haste, yours truly,

JAMES ANDERSON.

FLAX A RESTORATIVE, NOT AN EXHAUSTING CROP.

[AUTHORITY: PROFESSOR KANE.]

From Dixon's Letters on Flax Husbandry.

As there are many tales told, calculated to prejudice land-owners as well as farmers, and prevent experiments in flax-culture being made, I wish now to call attention to observations and experiments, in order to disabuse (if possible) the minds of those farmers who labour under the delusion (handed down to them by their grandfathers) that flax not only exhausts the soil, but is ruinous to the producer; and, as I think, the evidence I now bring forward will be sufficient to satisfy the farmers and prove the absurdity of such threadbare tales, I must address myself to those landlords who prohibit (by the terms of the leases granted) the cultivation of flax. Surely, they are more open to conviction than to continue to believe mere assertions in preference to FACTS PROVED BY EXPERIMENTS, and corroborated by the LEARNED PROFESSIONAL MEN, whose lectures on agricultural subjects have earned for them the thanks of so many noblemen and farmers' clubs in the three kingdoms. I cannot believe that there is a land-owner in England so contracted in his ideas as to take advantage of such restrictions being (through downright ignorance of the nature or value of the plant) in leases against its cultivation. If they consider it a more scourging crop than wheat (and that *I deny it to be*), have we not now skilful chemists able to direct us to restore to the soil, by the many now available manures, those ingredients of which flax may be found to have robbed it? And would not the oil-cake, or, what is better, the *crushed seed*, not only be highly beneficial in the feeding of animals, but is it not acknowledged BY ALL that there is nothing equal to it as an enricher of the farm-yard manure? With these facts before the eyes of the opponents of flax, I shall proceed and call their attention to further evidence on the subject.

As I cannot expect farmers to give the subject of which I am the humble advocate, the consideration that they would do, if the same was placed before them by a man of more influence, I must, therefore, endeavour to support my argument by the observations of men whose efforts in agricultural improvement have done much to advance and connect science with the agriculture of Great Britain. I have already used the names of flax-spinners; and, in order to corroborate my statements, I shall now add that of another, Mr. Crosthwaite, of Dublin, who stands in Ireland, as Messrs. Marshall and Co. do in England—at the head of the flax spinning trade, and I must couple with this gentleman the name of a professor whose works are acknowledged to be of national importance. The following is a quotation from Dr. Kane's writings:

"Mr. Crosthwaite, whose intimate acquaintance with all branches of this industry renders his authority highly valuable, considers that there are about 100,000 acres under flax in Ireland, and that the produce is about 30,000 tons, of an average value of 50*l.* per ton. This is 6*s.* 3*d.* per stone, and should give about 12*l.* 10*s.* [*\$62 50*] for the usual produce of the statute acre." "The flax, when it has grown to a suitable maturity, according as the design is to allow it to ripen its seed or not, is pulled, and either immediately, or in the next spare season, according to the circumstances of the locality, it is subjected to the process of rotting or watering. In the stem of the flax there may be recognized three structures—the outer skin or epidermis, covering a close network of fibres which encloses the plant as in a sheath, and in the centre a stem of dense, pithy material. The fibrous network is connected together by a glutinous matter which must be decomposed before the fibres can be separated from the stem, and it is to soften and rot this substance that the plant is steeped. If the steeping be continued too long, the fibre itself may rot, and be weakened and injured in quality; if the steeping be not continued long enough, the fibres are not thoroughly separated from each other, and the quality of the flax is coarser than it might be." "When the flax is steeped, the water acquires a darker colour, a disagreeable odour, and, it is well known, becomes poisonous to fish. This arises from the solution of the glutinous material which had cemented together the pure fibres." "The author of the 'Survey of Somersetshire' (Mr. Billingsby) says: 'Having myself cultivated flax on a large scale, and having observed the almost instantaneous effect of flax-water upon fish, similar to that produced by lime, I was led, some years ago, to apply it to some pasture land, by means of watering-carts similar to those used near London for watering the roads; the effect was astonishing, and advanced the land in value 10*s.* per acre.'"

This extract shows that Professor Kane has conversed with flax-spinners, and has been made acquainted with the details of flax-culture. The following passage on the same subject is taken from the "Scottish Farmer;" and, as the writer of the article is already partly convinced against his will, I hope fully to convince him that flax is not an exhauster of the soil:

"The landlords of Scotland have hitherto been opposed to the growth of flax, in

consequence of its being a 'scourging' crop; and, in the majority of leases, a clause is introduced prohibiting or restricting its growth. Professor Low says (and all our agricultural authorities agree with him), that flax is an exhauster of the soil and farm, and more so, when its seeds are permitted to arrive at maturity. When pulled green, its effects are less injurious; in which respect it follows the general law of other cultivated plants. But still, at whatever period reaped, it is thus far an impoverisher of the farm, that its stems yield no return in manure, and that its seeds only do so when consumed upon the farm. In a paper read by Dr. Kane before the Royal Irish Academy, that gentleman attempts to prove, that in the production of the fibre no exhaustion of the soil takes place, that substance being exclusively composed of organic matters derived from water and the atmosphere. He says, 'in this respect, the fibre differs from the woody stem which it surrounds; as the latter, by combustion, yields a considerable quantity of ash, consisting of inorganic compounds derived from the soil; but then, the woody part of the plant is not removed off the farm, it being of exceedingly little value; and, however the cultivation of the crop may exhaust the particular part of the farm on which it was grown, by the matters contained in this woody fibre, it is apparent that the farm itself will not thereby be exhausted, as these matters are returned to some other portion of it, in conjunction, perhaps, with the manure of the farm-yard. The proportion of inorganic matters contained in the seeds is very small compared with its entire bulk, so that the consumption of the seed on the farm not only makes the flax a non-exhausting crop, but absolutely a restorative one.'

Dr. Kane is supported in his theories by the Report of the Belfast Society, which says: "The principal objection urged against the extended growth of flax is, that it exhausts the soil without returning anything to it. But, by saving the seed and seed-bolls, and feeding upon them, the manure thus produced can be returned to the ground, and will supply most of the valuable constituents abstracted from it during the growth of the plant. The flax-shaws from the mill, and the putrescent water from the flax-pools, should be fermented together and returned to the soil. The land would thus have replaced on it almost every particle of matter formerly abstracted by the crop; as it has been ascertained, beyond a doubt, by chemical analysis, that the fibre for which the flax-plant is cultivated, is produced entirely from the atmosphere."

If we consider the quantity of seed for consumption on the land given by the flax-crop, we may well call it a manure-producing crop, rather than an exhauster of the soil. At the monthly meeting of the Belfast Flax Society, held on the 16th July, the following letter, which had been sent by one of its members, was read by the Secretary:

"I am happy to be able to bear my testimony to the fact, that if flax be judiciously grown, and well handled, there is *no other crop that will pay like it*. I had, last season, not quite eight Irish acres of flax, from which I had 295 stones, which brought 8s. per stone in Cooks-town market, and 31 stones at 6s., besides 4½ cwt. of scutching tow, at 9s. per cwt.:

295 stones, at 8s.	£118	0	0
31 stones, at 6s.	9	6	0
4½ cwt. tow, at 9s.	2	0	6
	£129	6	6

being upwards of 16*l*. per acre: besides this, I had an exceedingly large quantity of bolls, which fed my cattle to the greatest advantage during *the whole season*, and as much seed saved on the Courtray system, as sowed about three acres this year."

The seed in the bolls, if it amounted to an average Norfolk crop, would be equal at least to 319 bushels, so that I may add to the

The value of 319 bushels of seed, at 6s. 3 <i>d</i> . per bushel	£129	6	6
	99	13	9
	£229	0	3

And eleven English acres, if it cost 100*l*. to bring it to market, would have 129*l*. profit, on what I call a very middling or very light crop of flax, viz., thirty stones per acre.

Now, with all deference to Professor Low, I must believe experiments before his assertions; and, I believe that flax has never got a fair trial in Scotland, to enable him to tell us how much more it exhausts the soil than a crop of wheat, or to answer this question—How much manure will it take to bring the ground into the same condition after growing flax, that it would be in if it had been sown with wheat? It is only in this way we can come to anything like a correct idea of the subject; and, as I have said before, I have had as abundant a crop of oats, and also clover, after flax, as ever I had after wheat or barley. I challenge the opponents of flax to answer this question; and then we can calculate the expenses of restoration, and the means we have of doing it, by growing flax; for, according to every calculation I have seen, showing the expense

and the profit on wheat, or any other crop, there is none to be compared with *even a middling crop of flax*, as the most remunerating crop for the farmer. And as I am not confined to the quotation of *one, two, or three experiments*, in order to prove the fact, I shall give another instance of what may be made by its cultivation.

The Rev. G. Ash, Glebe Ballaghy, Ireland, in writing to the Secretary of the Belfast Flax Society, to tell him of the success of his first experiment, says:—

"I sowed fifty-three pecks of seed on three acres and three roods of ground, Irish measure, and I have had 236 stones of 16 lbs. or in Armagh-market stones 266½. I have two sacks grown from the same seed saved for my own sowing, and I have two tons of linseed meal, which saves me purchasing bran, etc. etc."

Here is the first experiment. A gentleman unacquainted with flax-growing, sows 13¼ bushels of seed on about five acres English, and has 266½ stone, or 53¼ stone to the acre, *two sacks of seed, and two tons of meal*; now, as the seed, it is well known, if properly saved, will pay RENT and ALL EXPENSES, we must reckon Mr. Ash had for his trouble profit as follows:—

266½ stones of flax, say 8s. per stone, 106l. 8s.

Added to this proof of the benefits derivable, I shall quote one more on its advantages, which I have taken from the *Agricultural Gazette*:—

"EFFECT OF OIL-CAKE ON THE MANURE OF THE ANIMALS FED ON IT.—A friend of mine has lately adopted a plan, which, under the same circumstances, I should strongly recommend; it is that of giving a small quantity of oil-cake to animals grazing, for the sake of improving an ordinary pasture; and its effects are astonishing. The pastures I allude to are small; and one or two bullocks more than they are calculated to carry are put into each: the lot are then allowed four pounds of cake per day per head; this, at a cost of about 2s. per head per week—which I believe the stock well paid for—has entirely altered the face of the pastures from what they were three years ago, when the plan was first adopted by him, and, I believe, without any loss to himself."—*G. Dobito, English Agricultural Society's Journal*.

I could, if necessary, multiply evidence; however, as I consider I have now placed undeniable facts before you, I will conclude my remarks, by a quotation from a letter from James M'Adam, Esq., Secretary to the Belfast Society, on the 18th December last. He says: "As a proof of the great demand for flax at present, I may mention that, from this port, orders are now out for 300 tons of flax from Egypt, and for 2000 to 3000 tons, value 70,000l. to 100,000l., from the Baltic; and this, in spite of the largest home-grown crop for several years. There have been lately erected in this neighbourhood 60,000 additional spindles, which will be at *full work* during the ensuing year, and which, it is calculated, will consume 3000 tons additional of flax yearly."

If this be not proof sufficient to satisfy farmers and land-owners of the importance of flax-cultivation, I can only say that they require such men as the learned Professor Kane to go amongst them. I am, sir, yours respectfully,

J. H. DICKSON.

6, De Beauvoir Square, London.

LINSEED JELLY—as food for stock—how made:

"The following is an analysis of linseed, by Mr. Gyde, of Painswick—a comparison of it with those of linseed cake, by the same gentleman, exhibits the superiority, as food, of the seed entire, over its husk, etc., after the oil has been expressed.

Water.	Gluten, Albumen, and Casein.	Starch, Gum, Sugar, and Woody Fibre.	Fat.	Ash.
10	22.8	27.2	36	4

"But the superiority of this article as food does not depend only on the assertions of scientific men who have investigated its composition: it has been *experienced*. Mr. Warnes, of Trimmingham, well known as a hearty advocate of flax culture, was, we believe, the first to point out the advantage of using linseed-meal, made into a sort of porridge with bean and barley-meal, as food for cattle. His recommendations have been extensively acted upon. The following, with which we have been favoured, describes the practice of one of our best Norfolk farmers: 'One bushel of linseed is ground between two smooth cylinders, and boiled slowly in a copper for one hour with thirty gallons of water, keeping the mixture constantly stirred to prevent burning. To every gallon of jelly thus produced, one bushel of cut straw is added, and the whole being mixed in a large tub is kept covered for four or five hours, after which it will be fit for use. I consider this the cheapest and best food for cattle that we can make; but if barley, bean, or pea-meal be thought necessary, the cattle will eat it better given to them in a dry state at the same time with the above preparation.' One of the most valuable pieces of evidence, however, on this subject that we have seen, occurs in Bacon's

'Report on the Agriculture of Norfolk,' where the experience of Mr. Postle, of Smallburgh, is given in detail.*

ON THE PROFITS AND QUANTITY OF FLAX PRODUCED PER ACRE.

To the Editor of the Gardener's Chronicle and Agricultural Gazette.

SIR—Press of business has prevented me, until this moment, from noticing your observations on my letter on the cultivation of flax, which you thought proper to *divide*, and insert in your paper of the 11th and 18th of January last. And I feel I have much cause to complain of the nature of your remarks, made, as they were, before the readers of your paper had an opportunity of seeing the whole of my letter, *without omissions*, which I also complain of. However, my object is now to place before the readers of your paper, what will convince practical men, that my statements are supported by facts, and that I have not had recourse to *theoretical observations* to prove them.

The impression conveyed to the readers of your paper, that I wished to make it appear that the owners of 112,200 acres in Ireland had each 21*l.* per acre profit, is *very unjust*; and as it has called forth a letter from Mr. John Sproule, who joins you in trying to make the readers of your paper believe "my statements" "are erroneous," I am anxious to say that I am prepared to meet the charge, and not only set myself right in the eyes of those who read your paper, *and have been misled*, but also to show that Mr. Sproule, if *ever he grew flax*, or *has seen flax growing*, should endeavour to keep pace with the times, and not continue to tread in the footsteps of his father and grandfather; and as his system of flax growing could only produce "40 stone to the acre," and realize 4*l.* 10*s.* for the seed, I would advise him, instead of commenting on letters sent to the *Gardener's Chronicle*, previous to publication, to spend a few weeks in Farningham, Norfolk, with Mr. Warnes, Mr. Farrow (secretary to the Ipswich Flax Society), and others in that quarter, men of the present day, unfettered by prejudice in favour of the *no-improvement*, and *let-well-alone* system. Mr. Negus, of Cumphlisham, Norfolk, and the Rev. J. C. B. Warren, of Horksley Hall, can teach him how to grow flax to produce from fifty to seventy stone to the acre, and twenty-nine to thirty two bushels of seed *into the bargain*, which seed is equal to the best Dutch, and better than Riga, which sold at 12*s.* 6*d.* last spring in Ireland; or, if perchance Mr. Sproule should visit Ireland, I would recommend him to call on the Rev. G. H. Ash, Glebe, Bellahy, and, in particular, on Messrs. Herdman and Co., flax-spinners, Strabane; and, as a proof of their ability to enlighten his understanding, not only on the *growing of the plant*, but the *management when grown*, I shall give a statement taken from the Reports of the Belfast Flax Society on the 14th ult.

Mr. Ash, in writing to the Secretary of the Society, to tell him of the success of his first experiment, says: "I sowed fifty-three pecks of seed on three acres three roods of ground, *Irish measure*, and I have had 236 stone of 16 lb., or in Armagh Market stones, 266½. I have two sacks grown from the same seed saved for my own sowing, and I have two tons of *linseed meal*, which saves me purchasing bran," &c.

Now, how will Mr. Sproule reconcile this with his observations and statement of 4*l.* 10*s.* for seed, and 40 stone to the acre, being "over the mark?" Here is the first experiment: a gentleman, unacquainted with flax-growing, sows 13¼ bushels on about 5 acres English, or 3 acres 3 roods *Irish measure*, and has 266½ stone, or 53¼ stone to the acre, 2 sacks of seed, and 2 tons of *meal*. However, this is not all: I have a little more for Mr. S., in order that he may know that all is not done *in growing the plant*.

Mr. Henderson stated at the meeting, that a farmer near Strabane sold Messrs. Herdman and Co. a field of flax, keeping a portion to himself, which he managed in *his usual way*, and sold the produce at 35*l.* per ton; but Messrs. H. and Co. having managed what they had from the same field, *on the improved method*, had flax worth 70*l.* per ton. Here is a puzzle that some may say "requires serious consideration." However, I feel satisfied that practical men will see no difficulty in the way of their (doing like Mr. Ash) trying experiments, nor will they be frightened by parties attempting to make *molehills* into *mountains* by saying "that the growing of flax in this country requires more serious consideration" than any other seed we commit to the soil.

You will observe by the written addition now sent to my letter formerly published, that I have given the names of practical gentlemen who can corroborate my statements, on *expense*, *produce*, and *profit*; and, as I never said, or intended to convey to the readers of your paper, that every man who grew flax on the 112,200 acres had 21*l.* or 50*l.* per acre profit (as, unfortunately for Ireland, there are too many like Mr. Sproule, ignorant of the proper way to acquire more than 10*l.* to 15*l.* per acre), on the contrary, I only wished to prove *what had been done*, and *what might be done*, by following the Belgian

* That valuable prize Report being in our library, we will turn to it on some early occasion.

mode of cultivation, rotation, and management of the plant; therefore, I hope you will do me the justice to publish this letter, and also insert *the whole of the one now sent*, instead of omitting some of the best and strongest arguments I have in favour of flax-growing in this country.

Mr. Sproule says, "From the prices I quote, flax is either a highly valuable or ruinous crop." I think the absurdity of this remark will be seen by his own calculation: for, as he chooses to say, 40 stone of flax per acre is *an average crop*, and shows by his statement, that a profit of 15*l.* 5*s.* 3*d.* per acre is certain, I think farmers, who know right well the profit on an acre of wheat, oats, or barley, can *too well tell the ruin that they would have to fear*, from 15*l.* 5*s.* 3*d.* per acre profit by sowing flax; and, as he affects to consider "my papers afford unquestionable evidence of my not being practically acquainted with the subject," I beg to observe, he has with this my address, and if he has *no objection* to furnish me or the public with his, I will tell him where to find *every field, of four farms I had*, in the counties of Down and Armagh, Ireland, on which my father and myself reared flax, that brought, in the city of Dublin market, 22*s.* 9*d.* per stone; and, on one farm, I reared flax, in 1826 and 1827, for which I only got 10*s.* 6*d.* per stone, and on that farm I had a scutch mill.

Mr. Sproule admits his "ignorance of this country, and his inability to say what sum should be assumed for rent," but hesitates not to find me in error *in this also*. Before I wrote a letter on the subject, I selected from a table I have, which shows the average price of land in forty counties in England and Wales; and, out of those, I selected *three to name*, Leicester 26*s.* 9*d.*, Worcester 26*s.* 2*d.*, and Somerset 25*s.* 10*d.* per acre, and I allowed the highest of the whole to be my guide; therefore, I think, with such proof before him, he has no excuse, *because of his ignorance*, to assume *his being right*, and *I wrong*, in this item: and as to his remarks on what he is pleased to term "the unpardonable omission of the seed," I beg to observe, there was so little of it saved during my residence in Ireland, the farmers being then nearly all of the old school, and prejudiced against taking it off the flax stalks, fancying it injured the fibre, I allowed the little benefit derived from what might be saved in seed, against such extras as poor rates, cess, and other small taxes, *unnoticed in my statement*—my object being then to prove that flax was profitable to cultivate for the fibre alone. However, as this has been questioned by Mr. Sproule, and may be considered doubtful by those who have compared his statements with mine, I shall now take advantage of his observations, and inform those who have seen the amount (4*l.* 10*s.*) which he allows for seed on one acre, that the Norfolk growers had last year from 9*l.* to 10*l.* worth on an acre.

I beg to hand, with this letter, a Report from the Ipswich Flax Improvement Society, and a letter taken from the Belfast *Northern Whig*, which was written by Mr. Warnes, and dated Trimmingham, Jan. 15, 1845, addressed to E. Bullen, Esq., Secretary to the Royal Agricultural Society of Ireland; those documents will prove the ignorance of Mr. Sproule's ideas on flax and seed (without any reference whatever to my letters), as to the quantity of *both* that can be grown in this country on one acre; and I beg of those gentlemen, landed proprietors, and farmers, who may have read your remarks, and Mr. Sproule's letter in your paper of the 11th and 18th Jan., to compare the proof I now bring forward in corroboration of my statements, and judge for themselves.

J. H. DICKSON.

London, March 15, 1845.

ON THE ADVANTAGES OF THICK SOWING.

How numerous yet are the mooted points in agriculture! One reason is, that results depend on so *many circumstances*, which even the most careful experimenter is apt to lose sight of.

Advantage of Thick Sowing.—The following is the result of some experiments which I made last year, in order to ascertain the relative merits of thin and thick sowing wheat, drilling, dibbling, and by broadcast. They were conducted with great care upon five acres of level land of uniform quality, being a good deep loam on a chalk subsoil, following a clover ley folded by sheep. The land was ploughed about five inches deep, as it was not thought desirable to bury the sheep-dressing below that depth. The seed was put into the ground about the 7th December, 1843, and the wheat was hoed in the spring of 1844, except the acre sown by broadcast, which was harrowed instead of being hoed. The plants in Nos. 2 and 3 (thin sowings) were by much the strongest, and looked the best throughout the season, until the approach of harvest, when it became evident that the quality of the grain and straw was inferior, more particularly on No. 2, which appeared to have suffered a little from mildew. Samples of the different lots were submitted to an eminent miller, and the value of each determined by him; the straw was valued at the market price. The results of these experiments are very re-

markedly in favour of thick sowing, and particularly of the old broadcast system; and if not conclusive against the doctrine of thin sowing, so strongly and, I may add, so ably advocated in this present day, should at least induce caution on the part of farmers before they depart from the practice of their forefathers. Indeed, it is difficult to believe that so great an advantage as the saving of a bushel or a bushel and a half of seed per acre can have been overlooked for so many generations. It seems more reasonable to suppose, that long practical experience has taught the farmer the more prudent course of a liberal supply of seed. It may, however, be contended, that had the ploughing been deeper and the seed put earlier into the ground, the result would have been different: this is not improbable, and it is possible the deficiencies in the quality and quantity of thin-sown wheat and straw might have been less observable; but the large differences which my experiment indicates, could hardly, I think, have been made up. I have, this year, repeated the trial of thin-sowing, having drilled one acre on the 26th of October last (the land having been deeply ploughed) with one bushel of seed, the rest of the field having two bushels per acre. The result I shall be happy to communicate, if desired.

As Mr. Dixon proves by his statement, that the profit by growing one acre of wheat is but 7l. 2s., and as Mr. Barclay shows, by *five different ways of trial*, that 40 bushels per acre is the most he could grow, which, at 6s. per bushel, would be £12 0 0
We must deduct expense of seed, ploughing, and labour, say . . . 2 10 0

Therefore the balance of £9 10 0

appears all that can be realized by growing ONE ACRE OF WHEAT in England. Now, if the reader will turn to page 31, and Letter No. IX., he will find one experiment of clear profit of 16l. per acre, and he will find another experiment in the same letter, of 21l. per acre, *not including the seed*, which, it is well known, *will pay all expenses*, and at Letter No. V. another experiment of 13l. per acre. It is because of these facts, I insist there is no crop equal to flax for the farmer.—*Dixon on Flax.*

Account of Experiments on the Relative Merits of Thin and Thick Sowing, Drilling, Dibbling, and Broadcast, conducted on Eastwick Farm, in the county of Surrey.

No.	Quantity of Seed used per Imp. acre.	System pursued.	Grain produced.	Weight per bushel.	Straw produced.	Value of Grain.	Value of Straw.	Total Value of the Produce per Acre.
1	2½ Bushels.	Drilled 9 inches apart.	Bushels. Head 34 Tail 3 37	lbs. 64½	Trusses. 70	Head at 7s. per £ s. d. bushel . . 11 18 0 Tail at 6s. . . 0 18 0 £12 16 0	Per load. At 36s. 3l. 10s.	Grain 12 16 0 Straw 3 10 0 16 6 0
2	1 Bushel.	Drilled 12 inches apart.	Head 22 Tail 3 25	62½	51	Head at 6s. 6d. per bush. Tail at 5s. 6d. 7l. 19s. 6d.	At 30s.	Grain 7 19 6 Straw 2 2 6 10 2 0
3	1 Bushel.	Dibbled 12 inches apart.	Head 28 Tail 3 31	63½	63	Head at 6s. 9d. per bush. Tail at 5s. 9d. “	At 33s.	Grain 10 6 3 Straw 2 17 9 13 4 0
4	1 Bushel and 3 pecks.	Dibbled 9 inches apart.	Head 34 Tail 3 37	64	72	Head at 6s. 9d. per bush. Tail at 5s. 9d. “	At 33s.	Grain 12 6 9 Straw 3 6 0 15 12 9
5	2½ Bushels.	Sown broadcast.	Head 37 Tail 3 40	65	84	Head at 7s. per bushel. Tail at 6s. “	At 36s.	Grain 13 17 0 Straw 4 4 0 18 1 0

D. Barclay, M. P., Royal Agricultural Society's Journal.

In giving to this subject more space and attention than some may conceive to be proper, we are influenced, not so much by reference to the actual amount of the crop, and the capital embarked in its culture at this time, as we are by the capabilities of the country for producing it; and by its intrinsic value as an element of agricultural wealth, if properly favoured by wise legislation, and by more familiar and extensive knowledge

of the most approved cultivation and management. But its production even now, perhaps, exceeds the common impression. In 1845 there were near 50,000 acres in cultivation in *flax* in the State of New York alone; and in Ohio, says the *Cultivator* of Sept., '48:—

“A highly respectable and intelligent gentleman, residing within forty miles of Cincinnati, stated a few weeks since that 100,000 bushels of flax-seed were raised last season in his county; and that nine-tenths of the stalk was thrown away, the seed being got out by threshing-machines, or the tramping of horses, either of which modes of course destroys the fibre. This seed produced the growers about \$65,000, and had the lint been saved, properly prepared, and sent to Liverpool, or even New York, an additional product, to the value of at least \$150,000 above all cost, would have been the result; and this is only one out of some twenty counties in this State where flax is extensively grown.”

Those of our readers who are now, or who may be so situated as to become interested, in the culture of *hemp* and *flax*, by the adaptation of their soil to the growth of these articles, may confidently expect to find the best information extant on the subject, as fast as we can appropriate to it the requisite space, compatibly with that variety which must be furnished by a journal demanded by new subscribers *every month*, from never less than twenty different States, and spreading over them all with remarkable equality of circulation.

ARTESIAN WELLS.

IF the editor has any claim to the attention of those who are conversant with the subject, he will feel much indebted for any information that can be given on the *modus operandi* for boring *Artesian Wells*! We have repeatedly expressed our conviction of the importance of diffusing more widely the practice of *boring for water*—we want to know the cost of machinery for that purpose, as well as the probable cost per foot for 1, 2, and 300 feet—the difference in the cost, if any, in passing through clay, sand, rock (limestone or sandstone), at each of those distances, together with any other items; and will have any engravings made with pleasure that may be needed, from drawings furnished to illustrate the subject.

We should suppose it all to be well understood in Alabama, where the most fertile and productive districts would be barren wastes, but for the facility with which water is obtained by boring, as we have understood, through a substratum of sandstone.

We think we have a friend at West Point, so skilled in civil engineering, to which this would seem to appertain, that we indulge the hope of help and knowledge from that quarter, and feel that we may claim it as not an inappropriate return for having, as chairman of a committee on the domestic economy of that place, when a visitor there (as we have twice had the honour to be), suggested and demonstrated how they could obtain, as they now do, in consequence of that report, an abundance of delicious water for all purposes, from the mountain, in lieu of a precarious supply by wells and pumps.

THE COTTON MANUFACTURE INDUSTRY.

THE Editor of the *New York Dry Goods Reporter*, whose opportunities for information are most extensive, and to whom we shall often be indebted for items interesting to our readers; remarking on a controversy which has lately appeared in *Hunt's Magazine*, says—

It would seem, therefore, that a new era has been reached in the cotton manufacture. The production of coarse goods in the United States being established beyond reach of contingency, is passing southward and westward; and that branch of finer productions, of which the Portsmouth Company is the great pioneer, must hereafter occupy the East. Skill and capital are the great elements of its production, and cost of raw material has far less influence upon its prosperity, being but a small item in the cost of the finished

article. If the view held by Mr. Lawrence and others is correct, viz. that the demand for cotton now gradually increases upon supply, and that therefore a higher range of prices must be looked for in the next ten years as compared with the last ten, that of itself is a powerful reason why the old established eastern factories should seek a counteracting element in the finer numbers. The fact that the South is going rapidly into the manufacture of cloths, is an additional reason why that result will be accelerated.

To the Editor of "The Plough, Loom, and Anvil."

Washington, 16th of Jan. 1850.

SIR—In the 2d vol. of your valuable work, No. 7, for the month of January, 1850, you have, I notice, been pleased to insert my humble attempt to respond to your inquiry of some one of your correspondents, as to the "best mode of dividing a farm, primarily devoted to the culture of wheat, corn, and clover; to the support of so much stock only as the operations of such a farm might require, having a view to economy of fences, and improvement of the land." And to this attempt of mine, you, Mr. Editor, under the control of your habitual courtesy, and characteristic kind feelings, have prefixed some remarks more highly commendatory of that attempt, and of its author, than he had the vanity to claim for it, or for its author; or he might have been induced to do, what you have been pleased to do for him, by subscribing his name to it. Having done this, you, by way of damper, subjoin to my proposed plan, the following commentary, viz. "We should apprehend it would be very tedious work to renovate worn-out farms, without more barn-yard manure than this system would give. The writer goes on the supposition that plaster of Paris will act on all land. But suppose that not to be the fact, as is the case on the Eastern Shore of Maryland, where there is but a small portion of land on which plaster will produce any visible effect. And then, again, on how large a portion of the country is lime too distant and dear to admit of being used? what would it cost in Fauquier and Rappahannock counties, Virginia?"

It is respectfully suggested, that the author of the foregoing commentaries might have found a satisfactory answer to his implied objections to my proposed plan, in the fact, that no general system of agriculture ever was, or can be, devised, which, when put in practice, will not be met by impracticable exceptions. The fact, then, that lime is not attainable in the two counties named, and that plaster of Paris will not act on the Eastern Shore, can furnish no objection to the use of both, in those extensive regions of our country, where both lime and plaster are readily obtained at a moderate cost, and when judiciously applied to worn-out land, act with the almost magic effect of restoring the dead to life.

When worn-out lands are too distant from lime, or so constituted as that plaster of Paris will not act on them, and the sole reliance for their restoration is on barn-yard manure and judicious culture, the operation must, of necessity, be comparatively slow in its progress and consummation. But that lands thus situated and constituted may be restored to a productive condition in three years, upon the plan I proposed in your January number, I have no doubt, and in the mean time yield a better annual profit, than if managed on any other plan now in practice. In regard to plaster of Paris, allow me to say, that I have found but two conditions of land unfriendly to the effects of it. One condition is, when land is naturally wet. The other is, when the land is full of aluminous acid, as shown by a bountiful growth of sheep-sorrel. In wet land, the moisture, which plaster would artificially supply on dry land, is already present. And where aluminous acid exists in land, the plaster is neutralized and becomes a *caput mortuum*, as soon as it comes into contact with that acid. May not this be the condition of the land on the Eastern Shore of Maryland, of which you say plaster will not act? If so, previous to the application of plaster on them, they should be liberally dressed with lime, chalk, or wood ashes, all very convenient to our brethren of the plough in that region. Then plaster will act.

In conclusion, I beg leave to repeat my conviction, that it comports best with the interest of him, whose capital is land, so to manage as to render every acre of it annually profitable, in whose form or other. Such, in my humble judgment, is the plan of management which I presumed to recommend in your January number, and in order to free it from your objections, I venture to tax your patience and kindness with this communication. And am, dear sir, your constant and sincere friend,

JOHN TALIAFERRO, of Virginia.

J. S. SKINNER, Esq.

READINGS FOR MOTHERS AND CHILDREN.

AGAIN is our space for this nevertheless favourite department, encroached upon, as many a housewife's department has been before to-day for the accommodation of the coarser half of the world.

In the last number, we gave a letter from the late William Wirt to his daughter, and now we offer an extract from another, marked for this purpose as we went along. It would, in fact, be easy to levy contributions, for months to come, on the same rich resource. Of the "small sweet courtesies of life," here recommended, we had ourselves a taste lately at the capital of the Old Dominion.

It was a clear, balmy, spring-like Sunday afternoon, and being left without acquaintance in the hotel, we longed for the back of a good horse, to go riding off up the falls, and "over the hills and far away."

A servant was sent accordingly, who, after a long stay, returned, saying he could get "no hoss without de money." "Thinks I to myself;" there's been horse thieves in these parts! So we gave Jehoshaphat the money to go and pay the hire; but now again he returned, quicker than before, saying that there was "no hoss to be got," for love nor money; but insinuated, in a sort of half whisper, that if master would try his luck in person, perhaps he might succeed. So away we climbed the hill to the stable. The ostler still said, it was *no go*! And so it would have been, but, luckily for us, there was standing near a Mr. Luck, a young gentleman, and an entire stranger, who, seeing our disappointment, kindly put in practice one of those "small sweet courtesies of life," which help to smooth its rugged places, by quietly ordering Sambo—"saddle my horse and offer him to the gentleman." And thus, instead of being left to mope away a long afternoon in the Exchange Hotel, we exchanged that annoyance for a delightful ride on the back of a good iron-gray; General Jackson's favourite colour—a trusty son

of old Eclipse—meditating, and venerating as we rode, the great bounty of Providence, in the profusion of his gifts to that region and neighbourhood; and lamenting the infatuation under which the good people of the Old Dominion are inveigled into a disuse—which is but another word for the abuse—of such magnificent resources.

There has Providence placed a noble navigable river, far up from the ocean into the very heart of the country, and at its head an inexhaustible water power, with which, and its neighbouring beds of coal, to manufacture and bring into condensed form for use and for commerce, the vast resources of plain and mountain. In place of which, what do we behold? This vast power of water splashing, and rolling, and wasting itself over beds of rock. And Virginia, instead of feeding, here on the spot, tens of thousands and hundreds of thousands of hardy and thriving manufacturers of her iron and her wool, her leather and timber, her brick and stone, with her own flour, and beef, and mutton; is lulled by the syren song of free-trade, and sending to Old England and New England, for everything that wood, and wool, and leather, and iron can make! But we had forgotten where we are—to write thus in the department of mother and children. Very well, say we—let the children read. Men who have grown old and stiff in political prejudice rarely revise their opinions; as Napoleon said of the Bourbons, they never forget, and they never learn. The party harness being once put on, it takes a set, and one lighter and more improved would serve but to chafe and gall them. The twig must be bent when it is young, and if common sense could have its sway the present generation would reach maturity in utter disbelief or amazement, that the nation had been so long in learning that every people who would learn to prosper, must learn to foster their own resources, and to work up their own materials.

I want to tell you a secret. The way to make yourself pleasing to others, is to show that you care for them. The whole world is like the miller of Mansfield, "who cared for nobody—no, not he—because nobody cared for him." And the whole world will serve you so if you give them the same cause. Let every one, therefore, see that you do care for them, by showing them, what Sterne so happily calls, "the small sweet courtesies of life"—those courtesies in which there is no parade; whose voice is too still to tease, and which manifest themselves by tender and affectionate looks, and little, kind acts of attention—giving others the preference in every little enjoyment at the table, in the field, walking, sitting, or standing. This is the spirit that gives to your time of life, and to your sex, its sweetest charm. It constitutes the sum total of all the witchcraft of woman. Let the world see that your first care is for yourself, and you will spread the solitude of the Upas tree around you, in the same way, by the emanation of a poison which kills all the kindly juices of affection in its neighbourhood. Such a girl may be admired for her understanding and accomplishments, but she will never be beloved. The seeds of love can never grow but under the warm and genial influence of kind feeling and affectionate manners. Vivacity goes a great way in young persons. It calls attention to her who displays it; and, if it then be found associated with a generous sensibility, its execution is irresistible. On the contrary, if it be found in alliance with a cold, haughty, selfish heart, it produces no further effect, except an adverse one. Attend to this, my daughter. It flows from a heart that feels for you all the anxiety a parent can feel, and not without the hope which constitutes the parent's highest happiness. May God protect and bless you.

Your affectionate father,

WM. WIRT.

TEXT AND COMMENTS.

"Text: 'Give a little water.' *Gardeners' Journal*.—Text: 'Water sparingly.' *Cottage Gardener*.—Comment: There is not, in all the foolish books on gardening, a more mischievous piece of advice than is contained in these silly injunctions; and if all the florists and nurserymen in the kingdom had combined to destroy the plants in private hands, they could not have hit upon more effectual means than enforcing such lessons. 'Giving a little water' destroyed

as fine a sample of Heaths as was ever seen in a private grower's hands. The advice is pernicious. 'Water seldom' will apply to many things; but common sense should tell us, that the object of watering is to feed the roots, and if the water does not reach the extreme points, or spongioses, it is useless or mischievous. In the very depth of winter, when plants want less than at any other time of the year, the watering of plants should be as copious as in the hottest summer. Never 'give a little water'—never 'water sparingly.' Every atom of the soil in a pot should be wetted, and that is all it wants in summer; the only difference is, that in summer it may want watering twice a day, because the water is absorbed and evaporates rapidly, and in winter, perhaps, only once a month, because it is absorbed and evaporates so slowly. We once saw a quantity of Heaths looking very poorly, and observed to the owner, that there was something wrong; they had then just been watered; we observed, that they must have had too much or too little water. On turning out one of the balls, it was wet just half an inch down the pot, and below this it was as dry as snuff. 'Who waters these plants?' we asked. 'I do.' 'How often?' 'When they get towards dry.' 'One more week at this rate,' we observed, 'would have killed the whole collection.' The grower said, 'he never could grow Heaths; he had, first and last, had hundreds die. Yet he had attended strictly to the directions he had read, and that had been given by nurserymen.' He had been always told to 'give but little water' in winter, and none while they remain damp, and these had not been wetted lower than half an inch down for two months. We cannot, therefore, too strongly urge our amateur friends to act upon this assurance, that 'plants in pots always, winter and summer, want the same quantity of water at every watering; the entire soil should be wetted. The only difference is this, that, as they only require watering when the soil is getting dry, it may get dry twice a day in summer time, and be three weeks or a month getting dry in winter.' Men of very small intellect read old books, and write over again, very imperfectly, and in other words, what they have read; these are the description of men who are always 'rushing into print.' They are ambitious to see their names published; and they have done more real mischief to horticulture than any other of the thousand ills that cross a science in its advance."

The Plough, the Loom, and the Anvil.

VOL. II.

MAY, 1850.

No. XI.

THE HARMONY OF INTERESTS :

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

To the friend, whoever he may be, that sent us the extract from the writings of Col. Taylor, and who will find himself attended to in another place, we commend, as we do to all planters who would judge for themselves, the following exposition of the effects of protection on the interests of the planter of *cotton*, of *tobacco*, and of *sugar*. Among these classes, we have a large number of readers who desire to understand for themselves the great question, how far a people may be trusted and may safely go, in the development of their own resources, and the encouragement of their own industry, by special and positive legislation. But before the reader enters on the study of the question, by the lights here presented, we pray him to divest himself of all prejudice, and of all care about party tests or concerns, or any other concern, but the *truth and the public interest*. Why should planters or farmers allow themselves to be blindfolded and led hither and thither, in subserviency to the force of names, or the dictation or the schemes of partisans, of whatever party? Do they not see that the chief aim and pursuit of politicians, is place and power, and that those who generally regulate the machinery of party have usually but little interest in the welfare of the cultivators of the soil? If all the people in the world belonged to one government, then should all cry out for free trade; but, as things are, those only (the few) are most concerned, who desire by monopoly and oppression to keep down the price of labour, leaving those on whose industry their enormous fortunes are built up, no power to consume the products of the plough. In a word, read—and if not convinced, *tell us why!*

CHAPTER ELEVENTH.

HOW PROTECTION AFFECTS THE PLANTER.

HAVING thus shown how the English, or colonial, system operates upon the farmers of England and of the world at large, I propose now to examine how it operates upon the planters.

Of all the products of the earth, cotton is that which is best fitted for clothing purposes, and that which would be most universally used were it accessible to those who desired to use it, which it is not. There are few commodities that can be more easily raised, none that can be converted into clothing at less cost of labour, and yet, so defective are the arrangements for its distribution, that by the time it reaches the consumer it has become so costly that its consumption is almost nothing.

The whole quantity of cotton raised is probably 1,500,000,000 pounds, being about one and a half pounds for each person composing the population of the world; yet, notwithstanding the exceeding smallness of this quantity, the power of consumption throughout the world is so small that the

producers are contending with each other for the possession of the markets: and the competition is so great that whenever the crop of this country reaches 1000,000,000 pounds, it is sold at a price less than the actual cost of production. Some of the countries that formerly exported it to a considerable extent, now raise little more than is needed for their own small consumption; and even here the question of limiting the quantity, as the only way to avoid ruin, has been the subject of anxious discussion. Throughout the South, planters are turning their attention to food, although the market for every description of food is, and must continue to be, glutted, unless we have a change of policy.

There is a perpetual complaint of over-production, and it is matter of rejoicing when, by reason of short seasons, or any other occurrence, the crop is diminished 200,000 or 300,000 bales, the balance producing more in the market of the world than could otherwise have been obtained for the whole. No better evidence need be desired that there exists some error in the distribution.

Over-production cannot exist, but under-consumption may and does exist. The more that is produced, the more there is to be consumed; and as every man is a consumer in the exact ratio of his production, the more he can produce the better it will be for himself and his neighbour, unless there exist some disturbing cause, preventing the various persons desiring to consume from producing what is needed to enable them to effect their exchanges with the planter, to the extent that is necessary to their comfort.

In examining into the movements of the cotton trade of the world, I may sometimes have occasion to refer to facts already given; and if I prefer to re-state them, it is because, from the great importance of a proper understanding of the subject, I deem it best to collect all the facts necessary to that end under one head.

The two great cotton-producers of the world are India and the United States. The former has long exported to distant markets food and cotton, indigo and saltpetre, bulky articles, the freight and charges upon which absorb nearly the whole product, and, as a necessary consequence, the condition of the people has steadily deteriorated. The difficulty of obtaining food has steadily increased as her manufactures have declined, and repeated famines and pestilences have swept off millions, thus diminishing the power of combination; and she now *therefore* exports men to occupy the places recently occupied by the slaves of Jamaica, Guiana, Demarara, and other of the West India colonies. With each such step, the cotton culture recedes from the low and rich lands towards the higher and poorer ones, and the condition of the cultivator deteriorates, for with each a larger proportion of his product is swallowed up in the cost of transportation.

In the early part of the present century, the manufacturers of India supplied cotton goods to a large portion of the world. England had then, however, invented machinery for its production, and to secure herself in its exclusive use she had prohibited its export, as well as that of artisans, and thus she compelled the cotton to come to the loom, instead of permitting the loom to go to the cotton. By degrees she cut off the foreign market of the manufacturer, but his home market still remained to him, so long as the Company retained the exclusive control of the trade. In 1821, the last year of the monopoly, the export from England to India was but 5,000,000 of yards, and 4,000,000 of pounds of yarn. In 1832, it had reached 60,000,000. In the first half of last year it was 110,000,000 of yards, and 10,000,000 of pounds of yarn. Large as are these figures, they require but little more than 100,000 bales for their production, and would make a consumption of perhaps 220,000 bales per annum, to take the place of that which has

ceased to be raised. With every step in the increase of importation, production has diminished. The culture and the manufacture both have disappeared from the rich lands of Bengal. The fields formerly occupied by this most useful plant have relapsed into jungle, and if we now desire to find the poor cotton planter we must seek him among the hills, where he obtains small crops in return for much labour, and then spends months in the work of transportation to the Ganges, where his miserable product is shipped to Calcutta on its way to England, to return to him at the close perhaps of the second year, giving him a few yards of poor cloth, a combination of cotton and flour, in return for the cultivation of an acre of land.*

Under this system the value of labour diminishes steadily and regularly, and with it the quantity and quality of the cotton produced,† yet Englishmen are accustomed to regard the low price of labour as one of the elements of cheap production, and to look to it as affording good reason to hope for large supplies in future. Thus Mr. Porter informs us that :—

“In the level plains of Candeish, and in many other parts of Hindostan, cotton wool, freed from the seed, could be sold with a profit to the cultivators, at one penny per pound, a cost which is trebled or quadrupled by the expense of conveyance to the ports of shipment.”—*Porter's Progress of the Nation.*

The price which remains to the cultivator is one penny per pound, but where “the profit” is to be found when the whole wages consist in an insufficient supply of the poorest food and clothing, followed by famine and pestilence in every case of failure of crops, it is difficult to imagine. Such, however, is the usual mode of treating this subject in England.‡ The more

* The produce of the great cotton-growing districts on the Nerbudda is carried on oxen, each taking one hundred and sixty pounds, at the extreme rate, in fair weather, of seven miles a day. The distance to Mirzapore, on the Ganges, is five hundred miles, and the cost is two and a half pence, or five cents, per pound. Thence it goes to Calcutta, a distance of eight hundred miles, by water, unaided, I believe, by steam. From another portion of the cotton-growing districts, in the Deccan, the transport occupies a continuous journey of two months, and in the rainy season the road is impassable and the traffic of the country is at a stand. *In the absence of even a defined road*, the carriers, with their pack cattle, are compelled to travel by daylight to prevent the loss of their bullocks in the jungles through which they have to pass, and this under a burning sun of from one hundred to one hundred and forty degrees. If the horde, sometimes amounting to a thousand, is overtaken by rain, the cotton, saturated with moisture, becomes heavy, and the black clayey soil, *through which lies the whole line of road*, sinks under the feet of a man above the ankle, and under that of a laden ox to the knees: and in this predicament the cargo lies sometimes for weeks on the ground, and the merchant is ruined! “Black clayey soils,” rich and fertile, are here superabundant, but the poor wretch who raises the cotton must cultivate the high lands that require neither clearing nor drainage, and his masters take half the product of their poor soils while refusing even to make a road *through* the rich ones: yet forcing him to send his cotton to market to be exchanged for cotton cloth manufactured thousands of miles distant. A system better calculated to compel men to continue cultivating the poorest soils, by aid of sticks, could not be devised.

† Import of cotton from India into England :—

1844		88,000,000 lbs.
1845		58,000,000 “
1846		34,000,000 “

Total export of all India to all parts of the world :—

1835-36		1,305,000 cwts.
1836-37		1,557,000 “
1844-45		1,623,000 “
1845-46		1,328,000 “
1846, 8 months		600,000 “

‡ A series of popular lectures on the cotton manufacture has recently been delivered in London, by Mr. Warren, of Manchester. In his first lecture he stated that should the

unproductive labour can be made the lower will be its price, the more confident will be the hope of using it to advantage, and the larger will be the sums expended in an effort that must prove for ever vain, while the people shall continue to be prevented from consuming on the land the products of the land.*

The deterioration of quality is due to the recession of cultivation from the lower and richer lands; and that recession is a consequence of the system that has ruined the manufacturers of India, and destroyed the power of combination of action. We know the superiority of the sea-island cotton. In Demarara, cotton plantations have always succeeded better on the sea-coast than in the interior. So was it in India. Salt manure is deemed to be of absolute necessity if superior quality be desired, as it gives a staple at once strong and silky. Such being the case, it is useless to attempt improvement, when day by day the cultivation recedes from the neighbourhood of the sea, producing in England a strong desire for the making of railroads by which it may be enabled to make its way from the hills without costing more labour for its transportation than had been required for its production. Every such effort must prove a failure. Free trade with England drove it to the hills. Freer trade will drive it to hills yet more distant. In some cases it is thought that if the poor people could be provided with carts, they could extend the culture with advantage, but the use of such vehicles supposes the previous possession of something like laid-out roads, and those are luxuries with which most of India is yet unprovided.

Like the people of India, those of the Southern States of the Union have, thus far, had a bulky outward trade, that had, of course, to bear all the expenses of the voyage out and home. For a time, this prospered. India was distant from the machinery of conversion and Carolina was near, and while it still continued necessary to resort to the former for supplies, the price of that raised in the latter was the price in India, *plus* the difference of transportation. England was a sort of home market in which the planter obtained twenty or thirty cents per pound. By degrees, however, the near supply rose above the near demand, and it became necessary to seek for

manufacturing population of that country increase during the next ten years in the ratio in which it has done during the last, it will become necessary, in order to employ them, to secure a permanent and cheap supply of cotton. This can be done, he thinks, by cultivating it in British India, where, on the authority of Major-general Briggs, Sir Charles Forbes, and others, there can be produced a supply sufficient for the wants of the entire world, equal in quality to the article supplied from New Orleans, *and cheaper than it by one-half*. He states the wages of American slave labour to be equal to about 1s. 6d. per day, while *that of the free Hindoo is only about two pence*. The advantages to be derived from such a course, he stated to be the certainty of a good and adequate supply at a cheap rate, the consolidation of our Indian possessions by the means of commerce, and the emancipation of the American slaves, by rendering their labour profitless to the owners.

* The "London Chronicle," of a late date, has an article showing that the efforts which have been put forth during the last few years to make India a cotton-growing country that might rival the United States have entirely failed. It notices the failure and abandonment of the experiments in cotton cultivation that have been carried on, under Dr. Wight's superintendence, at Madras. This enterprise, which had for its object the production of an article less palpably inferior to the cotton of America than the present badly-picked and indifferent Indian commodity, was zealously, and even lavishly, supported by the local government; but the late failure of a similar experiment in Bengal, after an outlay of about £100,000, had already given fair warning of the probable issue of Dr. Wight's efforts in the sister presidency, and with its abandonment would seem to settle the question that India will not again become, as it once was, a great cotton-growing country. In 1796 America did not export a single pound. In 1834 she exported as much as all the rest of the world put together. And in 1846, out of 467,856,274 lbs. imported into this country, 401,949,893 lbs. came from the United States, while only 34,556,143 were supplied by the East Indies and Ceylon! The total value supplied from India in 1845 did not exceed £600,000.

markets for cloth and yarn in India and China, in which the price realized by the producer could not exceed that at which it could there be sold, *minus* the difference of transportation. The necessary effect of this was to diminish the productiveness of Indian labour, and the power to consume cotton, and of course to increase the quantity to be forced upon the world, and with every step in course of this operation, there has been increased competition on the part of the American grower; the result of which is, that the Indian producer is ruined, and the American one is saved from ruin only by destructive operations of nature, frosts, freshets, and crevasses, by aid of which the supply is retained within the limits of demand.

The average consumption of this country is not less than thirteen, and is, most probably, fifteen pounds per head; and it is less, by at least one-half, than it would be but for the heavy cost, in labour, to the consumer. The average consumption of the world, outside of the Union, is little more than one pound per head, or about one-thirtieth of what it ought to be; and yet cotton has become almost the weed of the world, and men are everywhere desiring to substitute in its place something that could be better grown elsewhere. On the high lands they substitute wheat, which would grow better farther north. On the low lands they raise sugar, which would be much more productive farther south. Here are serious discords, and it is important that we trace the cause of their existence, with a view to provide a remedy for a state of things so unnatural.

With a view that we may do so, I give the following

SUMMARY STATEMENT OF CROPS, CONSUMPTION, &c., OF AMERICAN COTTON, FOR TWELVE YEARS.*

	Crops, as shown by receipts the 31st Aug.	Consumed in the U. States, year end'g 31st Aug.	Stock at the ports end of the year 31st Aug.	Imports of American Cotton into Great Britain, from 1st Jan. to 31st Dec.	Total am't. of American Cotton consumed in Great Britain.	Stock of Am. Cotton in Gt. Britain, Dec. 31.	Average quot. of Uplands in Liver-pool.
1836—7	1,422,930	222,540	109,036	1837 844,812	778,492	158,100	7 d.
1837—8	1,801,497	246,063	68,961	1838 1,124,800	913,328	316,100	7
1838—9	1,360,532	276,018	69,963	1839 814,500	813,488	242,300	7½
1839—40	2,177,835	295,193	78,780	1840 1,237,500	1,018,784	403,000	6
1840—1	1,631,945	297,288	72,479	1841 902,500	809,900	344,600	6½
1841—2	1,684,211	267,850	31,807	1842 1,013,400	893,256	373,400	5¾
1842—3	2,379,460	325,129	94,486	1843 1,396,800	1,110,046	593,200	4½
1843—4	2,030,409	348,744	159,772	1844 1,246,900	1,126,008	654,900	4½
1844—5	2,415,448	389,006	98,420	1845 1,499,600	1,289,808	809,100	4¾
1845—6	2,100,537	422,597	107,122	1846 937,000	1,280,096	397,800	4¾
1846—7	1,778,651	427,967	214,837	1847 874,100	867,516	286,200	6¾
1847—8	2,347,634	531,772	171,468	1848 1,375,400	1,189,500	348,300	4½

The stock in our own ports, Aug. 31, 1836, appears to have been, 109,000
 That of American cotton in English ports, - - - 90,000‡
 The crops of the twelve years, from 1836—7 to 1847—8, were 23,571,000
 To which must be added, for the additional consumption in the
 South and West, in the last two years, - - - 125,000

Total, - - - 23,805,000

The stock in port, and in G. B. at the close of the season 1847—8, 520,000

Consumption of twelve years, - - - 23,375,000

Thus divided—English, - - - 12,100,000

American, - - - 4,052,000

Additional, as above, 125,000

4,177,000

Leaving for the rest of the world,

7,098,000

23,375,000

* From the New York Courier and Inquirer.

† Duty, 1½d. per lb. taken off by Act of Parliament, passed 8th May, 1845.

‡ The imports of 1837 exceeded the consumption by 66,000 bales, and the stock, at the close of the year, was 158,000, from which, if we deduct the 66,000, there remain 92,000.

	Average of the first Two Years.	Total Average.	Average of last Two Years
English, ...	846,000 .	1,008,000 .	1,028,000
American, ...	235,000 .	348,000 .	542,000
All other, ...	444,000 .	591,000 .	548,000*
	1,525,000	1,947,000	2,118,000

From this we see that the average consumption of the twelve years exceeded that of the first two, in the following ratio:—

English, ...	18 per cent.
American, ...	50 “ “
All other, ...	22 “ “

But when we compare the first and last two years of the period, we obtain the following results:—

English, ...	21 per cent.
American, ...	125 “ “
All other, ...	23 “ “

The portion of Europe that has most fully adopted the system of protection being the *Zoll-verein*,† it will be useful to compare the growth in their consumption with that of Great Britain and Ireland.

The imports of raw cotton into *Prussia* before the formation of the Tariff-league or *Zoll-verein*, remained from 1827 to 1835 stationary at 44,000 cwts. per annum.‡ That of yarn increased from 1823 to 1835, from 61,000 to 115,000 cwts. The total increase of twelve years, was from 105 to 159,000 cwts., or from 30 to 45,000 bales. The following shows the growth from that period in the territories of the confederation:—

	1836.	Average from 1837 to 1841.	1843.	1845.
Raw cotton, quintals . . .	152,364	200,093	306,731	443,887
Cotton twist and wadding, do. .	244,869	351,884	475,564	574,303
	397,233	551,977	782,295	1,018,190

The quantity has more than doubled, and the home consumption has increased about 75 per cent.§ in a period during most part of which our own consumption had remained stationary.¶ The quantity of twist and wadding imported from Great Britain had increased 135 per cent. in a shorter period than was required in the latter for an increase in her home and foreign consumption of only 21 per cent. The power to import thus grew with the power of production. It is obvious that the consumption tends, and must tend, to increase most rapidly where there is the least intervention between the producer and the consumer, and equally so that the English demand, based upon the principle of intervention between the two, and consequent increase of cost to the consumer, cannot be largely and permanently increased. That of 1846-7 was less than that of 1837-8, and the difference between that of 1839-40 and that of 1847-8, great as was the fall of prices, was but 171,000 bales.

The great increase in the consumption of the *Zoll-verein* is due to pro-

* This period embraces a season of war and convulsion over the whole continent.

† De Bow's Commercial Review, Vol. V. p. 267.

‡ Merchants' Magazine, Vol. XIII. p. 286.

§ Ibid.

¶ The increase of consumption after the formation of the Union was very rapid. As early as 1838, it was said, that "The cotton manufacture of Saxony had already become of twice the extent it had reached before the Union."—*Porter's Progress of the Nation*, Vol. II. p. 198. The quantity of cotton hosiery made in Saxony has increased immensely of late, and from its cheapness has not only secured the monopoly of the markets of the Union, but has also been shipped largely to the United States.

tection. If, now, from the additional British consumption we deduct the *additional* yarn sent to this one protected country, we shall be enabled to see how trivial is the power of increase in the *unprotected* world. The account will then stand thus:—

	First two years.	Last two years.	Ratio of increase.
English	846,000 .	958,000* .	13 per cent.
Zoll-verein (1836)	100,000 .	230,000* .	130 “
American	235,000 .	542,000 .	125 “
All other	344,000 .	378,000 .	10 “

In the one case England took 846,000 at 7*d.*, total . . . \$53,000,000

In the other, 958,000 at 5½*d.* 48,000,000

In both, the price was fixed in her own ports, and regulated by her own power of purchase. Had our home consumption absorbed 200,000 additional bales, thus reducing the supply to 750,000, the price would have been 8*d.* and the amount would have been \$54,000,000 and the product of the whole crop would have been almost doubled.

The consequence of this incapacity of extending her foreign market is, of course, the accumulation of large quantities in English ports, accompanied by a fall of prices, by aid of which the English consumer obtains a larger quantity for the labour that he can afford to give in exchange for the materials of clothing, and that tends to decrease as his labour becomes more unproductive, and as the disposition to “fly from ills they know” increases. This will be seen by the following table:—

Crop.	Bales.	Average price.	British and Irish consumption.		Value.
			Quantity.		
1839—1,368,000	.	14·5 cents.	.	73,000,000 pounds.	\$10,585,000
1840—2,180,000	.	8·6 “	.	172,000,000 “	14,620,000
1841—1,634,000	.	10·3 “	.	97,000,000 “	9,991,000
1842—1,684,000	.	8·2 “	.	97,000,000 “	7,954,000
1843—2,388,000	.	6 “	.	120,000,000 “	7,200,000
1844—2,030,000	.	8·1 “	.	124,000,000 “	10,116,000
1845—2,100,000	.	5·9 “	.	164,000,000 “	9,696,000
1846—2,101,000	.	7·3 “	.	147,000,000 “	10,731,000
1847—1,778,000	.	10·1 “	.	77,000,000 “	7,777,000
1848—2,347,000	.	7 “	.	130,000,000 “	9,100,000
	1,961,000	8·6 “	.	1,201,000,000 “	9,777,000

The total home consumption by the 27,500,000 composing the population of the United Kingdom, was thus but 1,200,000,000 pounds, or an average of 120,000,000 per annum, giving 4½ pounds to each individual, supplied at a cost so low as to ruin the producer. The average of the first two years was 122,500,000, while that of the last two years was but 102,500,000, notwithstanding an increase of population that should have brought it up to 140,000,000.

From this statement it appears clearly that the power of the people of Great Britain and Ireland, to be customers to the cotton planters of the world, cannot go much beyond \$10,000,000; and that, instead of increasing with the population, it tends decidedly to diminish. The reason of this appears to me obvious. The people of England are perpetually engaged in the effort to sell the products of their labour in distant markets, in competition with low-priced labour, and therefore at the *lowest* price; receiving payment in food and other articles of consumption produced in distant markets, which come to them burdened with enormous cost of transportation, and therefore

* I have deducted and added only 70,000 bales, supposing the last two years' export not to have been as great as that of 1845.

obtained at the cost of much labour. The natural growth of production elsewhere tends to increase the supply of raw materials, but the power to pay for them does not increase, because the labour of British subjects, home and colonial, instead of becoming more productive of commodities to be given in exchange, is becoming less so from month to month and from year to year, and yet into that constantly diminishing market are thrown all the surplus products of the world, that the price of the whole product may there be fixed. The effect of this is to throw on the planters the loss that should belong to themselves, and thus enable them to supply themselves at the *lowest* price; whereas, whenever the cotton planter shall cease to be dependent upon them for his market, they will again, as formerly, be obliged to buy at the *highest* price. The product of British labour, measured in the article of first necessity, food, is small, and the surplus remaining, to be applied to the purchase of clothing, is therefore very small indeed. They are incessantly engaged in supplying low-priced, and often worthless clothing to the world, and are therefore unable to clothe themselves.

That the tendency is downward, seems scarcely to admit of a doubt. A few years since, by a great effort, the poor-rates of England were reduced to less than £4,000,000. They have since risen gradually, and those of 1848 were £7,817,000, or \$38,000,000. Every ninth person is a pauper. In Scotland, the destitution of a large portion of the population is frightful. The people of the Northern and Western Highlands are in a state of pauperism; and Glasgow and its vicinity present a scene of wretchedness scarcely, if at all, to be exceeded in the world. Ireland is exhausted. There being no separate accounts of the imports into that kingdom, it is not possible to ascertain the present consumption of cotton, but the condition of the people is now far lower than at the dates of the following returns:—

The whole import of cotton into Ireland from all parts of the world, in the twenty years from 1802 to 1821 both inclusive, amounted to 538,542 hundred weights, or about 150,000 bales, being an average of 7500 bales per annum, and the whole import of cotton yarn, to 19,995,350 pounds, or about 1,000,000 pounds per annum, the product of about 4000 bales, making a total of 11,500 bales.* The amount of cloth imported is not given.

In 1825, the year of great expansion everywhere, with an export to Great Britain of agricultural products amounting to almost \$35,000,000, we find the import of cotton-wool to have been 4,065,930 pounds, and the import of cotton cloth to have been 4,996,885 yards, making in the whole about 6,000,000 pounds, or about 18,000 bales of cotton, in all its forms, required for the supply of almost 8,000,000 people; being about three-quarters of a pound per head.

In subsequent years, no information can be obtained, owing to changes in the mode of keeping the custom-house accounts; but in a general report on the state of the trade of Ireland, made by a committee whose object would not have been promoted by under-estimates, it is stated that the import of cotton-cloth into that kingdom was, in 1835, 14,172,000 yards, being equal to about 4,000,000 pounds of cotton, or half a pound per head. What quantity of cotton-wool, or yarn, was imported at that time, cannot be ascertained, but it is elsewhere shown that some of the largest establishments for manufacture, of a period somewhat earlier, had disappeared, and that the calico printers were in a state of bankruptcy.†

We may now look to the consumption of the colonies of Great Britain. In the years 1845, '46, '47, the export to them was as follows,‡ in millions of pounds:—1845, 85; 1846, 87; 1847, 67. Of this, however, large

* Ireland before and since the Union, by R. Montgomery Martin, pages 56 to 60. † Ibid

‡ Merchants' Magazine, Vol. XIX. 600.

quantities went to Gibraltar, Malta, Jamaica, and other places, to be smuggled into Spain, Mexico, and other countries, and the consumption of the colonies of themselves could not have exceeded 70,000,000, or about 170,000 bales, for more than 100,000,000 of inhabitants. During this time, the average price was a fraction over 7 cents, and it follows that \$5,000,000 is the maximum amount of trade maintained, through the medium of England, by the planting States of the Union, with a large portion of the people of the world, although producing two-thirds of the whole quantity of this necessary commodity for the use of the world.

Taking the total consumption of the United Kingdom and the colonies, we now have the following quantities :—

	1845.	1846.	1847.
Millions of pounds . . .	239	234	144

Need any better evidence be desired of the poverty inflicted by the system upon all the people subject to it, than the fact that an increase of price equal to one cent per yard reduces the consumption almost one-half?

Let this be compared with the growth of consumption in the protected markets of Germany and the United States, and it will be seen how steady is the protected, or real free-trade, system, compared with the perpetual change of the monopoly one. How great, too, the difference in the consumption per head!

While England and all her vast possessions consumed but 144,000,000 the consumption of the *Zoll-verein* (population 25,000,000) had grown in nine years from 45,000,000 to . . . 115,000,000 and that of the Union was . . . 243,000,000

We have seen how slow has been the growth of the English demand, and it may now be well to see the wasteful and exhausting process by which even this has been obtained. "The extremely low price of cotton," say Messrs. Rathbone, Brothers & Co.,* "has encouraged the manufacture of a very inferior class of goods, which require a great weight of cotton compared to the labour expended on them, and of which the make ceases entirely when cotton is moderately high. The demand for very coarse yarn," they continue, "is always large at very cheap prices, but in the year just closed it has exceeded all precedent,† particularly for export, chiefly to the Levant, and in some instances to accelerate its make, it has not passed through all the usual processes. It is on the consumption of cotton for these classes of goods," they add, "that even a moderate advance in prices is apt so immediately to tell." The cotton thus forced into the Levant goes to the same countries that before were supplied from India, and thus is the poor Hindoo deprived of another portion of his market, the necessary consequence of which must be a further depression of prices, and increased inability to continue the work of production. The decline in the trade of Western India is remarkable, and is probably the result of this flooding of the Asiatic markets with half-made cotton goods.‡

* Circular, January 3d, 1849.

† The prices of ordinary cotton ranging during a large portion of the year, from 3d. to 4d.

‡ The average imports of Bombay for the five years ending December 31, 1846, were 63,000,000 of rupees, while those of 1846 were only 52,000,000. The exports were as follows :—

	5 years ending December 31, 1846.	1846.
Cotton, . . bales . .	380,987	257,743
Wool, . . lbs. . .	3,421,976	4,626,470
Coffee, . . lbs. . .	3,140,821	1,529,900
Pepper . . cwt. . .	47,260	46,182
Indigo, . . lbs. . .	135,833	55,928
Ivory . . cwt. . .	5,764	6 109

It has been seen how large was the export to India in the first six months of the year, and now we see by the newspapers of the day what are the consequences. Low as was the price of cotton, the speculation has not answered. The markets are glutted, and the prices are unremunerative. "Great caution," it is said, "must now be exercised, or the exporting houses will suffer exceedingly."* The small rise in price has already caused many mills to commence working short-time, and the operatives in them are thus deprived of the power to purchase clothing. It is the most gambling, and most extraordinary system, and the most destructive to the interests of the agricultural population of the world that has ever been devised. The fever and the chill succeed each other with such rapidity, that we are scarcely advised of the arrival of the one, before we see indications of the approach of the other. The cause of this difficulty of extending the sale of cotton in distant markets is to be found in the fact that the labour-cost of cloth so obtained is great. We have seen that the extension of the manufacture in this country for a few years following the passage of the tariff of 1828 was rapid, and that it then became almost stationary under the Compromise, yet the import not only did not increase but decreased until it reached the lowest point in the period of 1842-43. The labour-cost of clothing was steadily increasing, but as the tariff of 1842 came into operation the labour-cost diminished, and there arose a power to pay for finer cloths from abroad, and thus the import and manufacture increased together. If we desire to see the operation of this, we need only take a single farmer of Tennessee or Kentucky, who obtains 30 or 40 bushels of corn in return for the labour bestowed on an acre of land, and is happy to sell it at 20 cents per bushel,† when the price in Liverpool is 75 or 80 cents. Thirty-five bushels yield here \$7, which is about the cost of 70 yards of tolerable cotton-cloth, plain and printed, when received on his farm. To produce those 70 yards would require 20 pounds of cotton, or one-twentieth of the product of a well-cultivated acre. To convert those pounds into yards of cloth requires far less than half the capital, and half the labour required for their original production. Taking, however, the conversion at one half, and adding that proportion to the number of pounds, we obtain the equivalent of 30 pounds of raw cotton as the return for 35 bushels of corn, and yet that corn sells, at the place of consumption, for as much as would purchase almost a bale of cotton. It is obvious that though the money-price of the cloth is low, the labour-price is high, and it is by the latter that the power of consumption is measured. The cloth, too, is worthless. As far back as 1832, the quantity of flour required for the use of the cotton factories of England was stated at *forty-two millions of pounds*,‡ or almost as much as the weight of 100,000 bales of cotton, all of which is traded off as cotton, to the poor consumers of distant lands, who are thus defrauded and impoverished.

Bad as is even this, it is far from all the loss that is sustained. The corn is sent from the land, and the farmer loses the refuse. The land is impoverished, and its occupant is compelled to fly to other lands, to be again impoverished. *The loss from this source alone is far more than the value of all the imports into the Union, of every description, from all the manufacturing nations of the world.* The apparently cheap clothing is very dear. It is obtained at the cost of much labour, and of little value when obtained.

* Morning Herald, November.

† "Tennessee grows more corn than any State of the Union. A few months since we took the liberty to ask a farmer from Tennessee who had a drove of hogs in our streets, the price of corn in the region from whence he came. He replied that it was worth ten cents, and wheat fifty cents a bushel."—*Augusta Chronicle*, May, 1849.

‡ McCulloch's Commercial Dictionary, article *Cotton*.

What is true of Tennessee and India, is equally so of the other parts of the world that are compelled to depend on England for supplies of cotton cloth. The poor Russian obtains less than a pound of cotton for a bushel of wheat, and thus he gives ten days' labour for one; whereas, if he could have cotton converted on the spot, by the man who ate his food, he would obtain day's labour for day's labour. So is it with the German, the South American, the Mexican, the Italian, the Spaniard, and the Turk. The system tends to prevent concentration and combination of action, and to diminish the value of labour throughout the world, and it is because of this, that almost all nations are endeavouring to shut out the manufactures of Great Britain. Everywhere, however, they are met by the smuggler, now regarded by the highest authorities of Great Britain as the greatest of reformers. Gibraltar is maintained for the purpose of smuggling goods into Spain. Exhausted Portugal receives millions of pounds of cotton goods, likewise to be smuggled into Spain; and thus is that unfortunate country kept in a state of poverty, because the people of England are pleased to believe that it is profitable to buy cloth produced abroad, while the labourer at home is idle for want of demand for his labour, and the food perishes on the ground for want of mouths to eat or roads to transport it.

If the system tends to the exhaustion of the people who have to buy cotton at so high a price, not less does it tend to the exhaustion of those who have to produce it, and who are compelled to sell at whatever price the people of England think proper to fix upon it. Why that is so, may, perhaps, be ascertained by an examination of the following table:—

Crop.	Stock in Liverpool, Dec. 31.		Price.	Gross proceeds of sales of American cotton in Liverpool, from which are to be deducted freights, commissions, &c. &c. Weight of bale estimated at 450 pounds.*
	Bales.			
1837—1,422,000	158,000	7d.		\$49,000,000
1838—1,801,000	316,000	7		57,000,000
1839—1,860,000	242,000	7½		57,000,000
1840—2,177,000	403,000	6		55,000,000
1841—1,631,000	344,000	6½		45,000,000
1842—1,684,000	373,000	5¾		47,000,000
1843—2,379,000	593,000	4¾		47,000,000
1844—2,030,000	654,000	4¾		49,000,000
1845—2,415,000	808,000	4¾		51,000,000
1846—2,100,000	597,000	4¾		56,000,000
1847—1,778,000	286,000	6½		51,000,000
1848—2,347,000	348,000	4½		45,000,000

The quotations of the latter portion of the last year were below the average, being about 4d., and about that point they remained for several months, until the chief portion of the crop had been shipped. The unfavourable prospects for the new crop tended to prevent a further fall, but it is impossible to tell what would have been the price had that of the present year increased in its proper ratio to the population engaged in its production. It would certainly have fallen much below even fourpence. An examination of this table will, I think, enable us to understand the cause of the present extraordinary state of things. A large portion of the crop of the present year has been destroyed by frosts, freshets, &c., and that fact, instead of bringing with it distress and ruin, has brought with it increased activity and life among planters, and increased power to consume cloth, sugar, coffee, &c. Why is it so? The answer can, I think, readily be given.

The amount that can be collected by Great Britain, in payment for American cotton, consumed at home and abroad, and for freights, commissions, &c., appears to be limited to somewhere between \$45,000,000 and \$57,000,000,

with an obvious tendency to diminution. Of the crop of the past four years, the quantity consumed among ourselves, and exported by us directly to foreign ports, has not varied materially from 1,000,000. The balance has gone to England, who has \$57,000,000 with which to pay for 900,000 bales, say \$63 a bale. The crop, however, reaches 2,400,000 bales, and we send her 1,400,000; all of which have to be compressed within a smaller sum than 57,000,000, for now there are large expenses for storage, interest, risk, &c., and the amount falls to 50,000,000, leaving the planter but \$36 a bale, out of which he has to pay the high freights consequent upon large crops, and upon a large number of bales, instead of that moderate freight that would have accompanied small ones, and upon a small number of bales. The price obtained in England fixes that of the crop, and the result is as follows:—

1,900,000 bales at \$63,	\$120,000,000
Less low freights, at home and abroad, upon a small quantity.	
2,400,000 bales at \$36,	86,000,000
Less high freights, at home and abroad, upon a large quantity.	

It is obvious that it would have been far better that the 500,000 bales should have been burned, or destroyed by frost before being picked. The crop of 1844 was 812,000,000 pounds, and the product was estimated at

	\$65,772,000
In 1845, it rose to 958,000,000, and the product fell to	56,000,000
In 1847, it fell to 711,000,000, worth	72,000,000
In 1848, it rose to 1,100,000,000, and until the occurrence of frosts and freshets, the prospect was that it would not average at New Orleans more than 5½ cents, or	60,000,000

The gradual but steady subjugation of the planters to the system may be seen from the following facts: From 1830 to 1835, the price of cotton here was about eleven cents, which we may suppose to be about what it would yield in England, free of freight and charges. In those years our average export was about 320,000,000, yielding about \$35,000,000, and the average price of cotton cloth, per piece of 24 yards, weighing 5 lbs. 12 oz., was 7s. 10d., (\$1.88,) and that of iron £6, 10s., (\$31.20.) Our exports would therefore have produced us, delivered in Liverpool, 18,500,000 pieces of cloth, or about 1,100,000 tons of iron. In 1845 and '46, the home consumption of the people of England was almost the same quantity, say 311,000,000 pounds, and the average price here was 6½ cents, making the product \$20,000,000. The price of cloth then was 6s. 6¼d., (\$1.57½,) and that of iron about £10, (\$48,) and the result was, that we could have, for nearly the same quantity of cotton, about 12,500,000 pieces of cloth, or about 420,000 tons of iron, delivered in Liverpool. Dividing the return between the two commodities, it stands thus:—

	Average from 1830 to 1835.	1845-6.	Loss.
Cloth, pieces,	9,250,000	6,250,000	3,000,000
And iron, tons,	550,000	210,000	340,000

The labour required for converting cotton into cloth had been greatly diminished, and yet the proportion retained by the manufacturers was greatly increased, as will now be shown:—

	Weight of Cotton used.	Weight of Cotton given to the planters.	Retained by the manufacturers.
1830 to 1835,	320,000,000	110,000,000	210,000,000
1845 and 1846,	311,000,000	74,000,000	237,000,000

In the first period, the planter would have had 34 per cent. of his cotton returned to him in the form of cloth, but in the second only 24 per cent. The grist miller gives the farmer from year to year a larger proportion of the product of his grain, and thus the latter has all the profit of every improvement. The cotton miller gives the planter from year to year a smaller portion of the cloth produced. The one miller comes daily nearer to the producer. The other goes daily farther from him, for with the increased product the cost of transportation is increased.

We may now inquire into the cause of the accumulation of stock in the English market, and if that can be ascertained, we shall be able to see why it is that cotton has fallen so ruinously low.

Of the crop of 1828-29, our own consumption was . . . 118,000

Of those of 1832-33 and 1833-34, the average was . . . 195,000

Of that of 1834-35, it was . . . 216,000

having almost doubled in six years, and with a tendency to an increase in the ratio of advance; and this increase was attended by no diminution in our consumption of foreign cloth.

Of the crop of 1841-42, we consumed only . . . 268,000
with a great diminution in the consumption of foreign cloth.

Of that of 1847-48, . . . 607,000
with a large increase in the consumption of foreign cloth, the total consumption having much more than doubled in a similar period of time. In the period intermediate between 1835 and 1843, our consumption had been stationary. Had it not been interfered with by the action of the Compromise bill, it would certainly have doubled in that period, and probably much more than doubled. If, however, we assume an increase of only $12\frac{1}{2}$ per cent. per annum, or quadruple the increase of population, the following would have been the home demand:—

1835-6 . . .	243,000 bales	1839-40 . . .	388,000 bales
1836-7 . . .	273,000 "	1840-41 . . .	437,000 "
1837-8 . . .	307,000 "	1841-42 . . .	491,000 "
1838-9 . . .	345,000 "		
		Total . . .	2,484,000

The actual consumption was . . . 1,844,000

Difference . . . 640,000

The loss of demand to the planter was thus more than *the whole quantity* that was left unsold when the market broke down.

Following up the consumption to the present time at the same rate, we obtain the following results:—

1842-3 . . .	552,000 bales	1846-7 . . .	883,000 bales
1843-4 . . .	621,000 "	1847-8 . . .	994,000 "
1844-5 . . .	680,000 "	1848-9 . . .	1,019,090 "
1845-6 . . .	785,000 "		
			5,550,000

The actual consumption has been about . . . 3,000,000

Difference in seven years, . . . 2,550,000

Total difference, . . . 3,190,000

No one can doubt that the progress would have been greater than is here set down, and yet with no more than this, we should have used above 3,000,000 bales that we have not used. Had we done so, the producer of cotton would have fixed the price and not the buyer. Under such circumstances would it have fallen below ten or twelve cents per pound? Would it not, on the contrary, have risen to fourteen or fifteen, unless the crop had been much increased? I think it would, and I feel assured that it will do so in a very brief period from the thorough adoption of a system

that will establish here such a market for labour as will enable us to consume on the land the products of the land, and my reasons for so believing are as follows:—

The good cotton lands of India are now waste. To render them productive requires labour and capital. To induce the application of either, the labourer must have wages and the owner of capital must have profits. Both must rise in price with any increased demand for them. Such demand must arise when England shall find herself compelled to look to India for any increased supply, as she must do so soon as our home demand shall have risen to the extent of 1,000,000 bales per annum, as it will do in the next three years, if permitted so to do.

It will be asked, what should we do with all this cloth? In reply, I say again, and I repeat it because it is essential that it be recollected—*every man is a consumer to the whole extent of his production, whatever that may be*. Had the tariff of 1828 remained unchanged, the production of coal in the same period would have reached 15,000,000 tons, for furnaces and rolling-mills would have been built throughout the country, and railroad bars would have been made by hundreds of thousands of tons, and treble the roads would have been made without producing bankruptcy. The demand for roads, and mills, and furnaces, and steam-engines of every description would have created a vast demand for labour that was wasted, and the surplus earnings would have gone to the purchase of clothing and other of the conveniences and comforts of life, and there would have been made a market on the land for the products of the land, to the extent of hundreds of millions of dollars, enabling both farmer and planter to improve the machinery of production and transportation, growing rich instead of remaining poor as they have done. With each such step the immigration from Europe would have increased, and as every man would at once have become a producer, every one would have been a consumer. The Englishman would consume twelve pounds, where before he consumed but four, and the Irishman would consume twelve where before he consumed but one, while freights to Europe would be so far reduced that the price of cotton in New York would be almost as high as in Liverpool.

It will be observed that the quantity here set down for 1846–7 exceeds, by only one-third, that which we actually did consume. Had immigration continued to increase, from 1834 to the present time, at the rate at which it was then advancing, our population would be greater than it now is by 20 per cent., providing for nearly the whole quantity, without any allowance for increased consumption by the population previously existing. The whole of them would have needed large supplies of coffee, silk, and a thousand other things from abroad, for much of which we should have paid in cotton goods. The facility of obtaining iron would have given roads to the farmer and planter, and all would have had more of the proceeds of their labour to apply to the purchase of clothing. The planter himself, and his people, would now be consuming three yards where now they consume but one; and the home-market would now be absorbing 1,200,000 bales, instead of a million. What then would be the price of cotton, even with a crop of 3,000,000? Would it not be \$60 a bale, yielding him 180 millions instead of 80? I think it would.

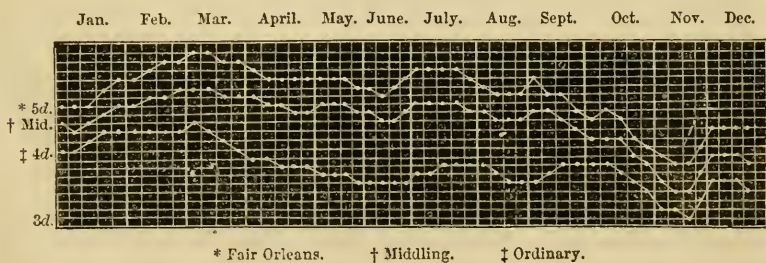
In 1845 and 1846, the planter supplied 311,000,000 of pounds, for which, *delivered on the sea-board*, he could have had 74,000,000 lbs. *delivered in Liverpool*, the freight and commissions, homeward, being paid by him. He gave 156,000,000 for 37,000,000, the charges upon which, without duty, would have reduced it to 30,000,000 on the plantation, and probably less. The 30,000,000 had, however, been twisted and woven, and the difference,

one hundred and twenty-six millions, was what he gave for the twisting and weaving of *thirty millions*. The average work of operatives, men and women, boys and girls, exceeds the conversion of 3000 pounds of cotton into such cloth, per annum. The planter, then, gave 126,000,000 of pounds of cotton for the labour of 10,000 persons, chiefly boys and girls, and he transported 156,000,000 to market. Were he to calculate the cost of transportation from the plantation to Nashville, or other place of shipment, he would find that that alone was far more than the labour he obtained in return, and that he had in fact given the cotton itself away, receiving for it no equivalent whatever.

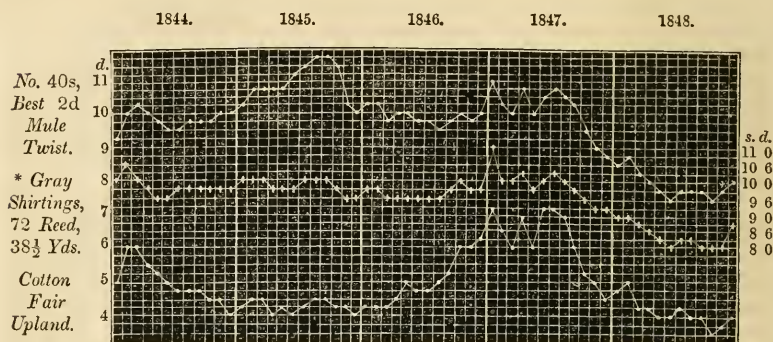
Had the whole 156,000,000 been converted at home into cloth, it would have amounted to about seven pounds additional, per head, for the people of the Union, and it would then have been consumed at home, for the consumption of the South would then have risen to a level with the present consumption of the North, and the latter would have largely increased, because of the great demand for labour that would have existed. Had that been done, the price of the whole crop would have been 8d. instead of $4\frac{1}{2}$ d., and the planter would have received seven cents per pound, *additional*, on 900,000,000 of pounds, or *sixty-three millions of dollars*—and that, large a sum as it is, is but a part of the benefit that would have resulted from such a course of operation.

It will be said that high prices would arrest consumption. If so, how important it is to the producer to cut off the enormous charges of the host of persons that now intervene between himself and those who desire to consume his products. High prices, consequent upon the maintenance of the existing system, do arrest it, because they are a tax upon both producer and consumer. Such prices realized by the former, consequent upon an increased facility of exchanging with the latter, would produce a contrary effect. They would increase it; for we should obtain more from all the world for what we had to sell, and our own consumption would increase more rapidly. The increasing emigration to this country would raise the value of man abroad, and those whom we now see expelling him from their lands, burning his house that he may not return, would then find themselves compelled to offer him inducements to remain. Agriculture would then improve and wages would rise, and the power to consume cotton, on both sides of the Atlantic, would grow, to the infinite advantage of the planter. With the increased demand, he would at length find something like certainty in place of the present gambling system under which he is so often nearly ruined. How little certainty he now can have, will be seen by the following diagrams, which I take from the circular of Messrs. Rathbone, Brothers, & Co., before referred to.

Fluctuations in the price of Cotton, in 1848.



The following shows the variations, from 1844 to 1848, in the prices of cotton, twist, and cloth.



The highest and lowest lines show the comparative prices of yarn and cotton, the quotations being per lb. on the left of the tables. The middle line shows the fluctuations of a cotton long cloth, the quotations being per piece, on the right of the tables.

Here we see the price of cotton lowest when cloth is at the highest; and the manufacturers realizing fortunes, while the planter is being ruined. Such are the inevitable results of a system that forces almost all the cotton of the world into a market in which there is but a given amount to be exchanged against it, and in which the price of each pound is dependent entirely upon the relation which the whole mass bears to the constantly diminishing sum that can be spared to pay for it. It is a constantly shrinking Procrustean bed. While thus destroying the planter, and lessening his power to provide for his people, there is an unceasing abuse of him as an owner of slaves, and an unceasing threat to substitute the *free* labour of the wretched Hindoo for that of the well-fed, well-clothed, and well-housed labourer of the South, and the lower the price of cotton, the stronger is the determination to keep it low. Railroads are to be made in India, that cotton may come to market cheap, and cotton cloth go more freely to that country; and yet with every step of increase in the export of cotton goods, the poor Hindoo becomes more and more enslaved, and more and more the victim of famine and pestilence.

The difference between twelve cents and eight cents per pound for cotton is, on an average, about one cent a yard. The consumption of Great Britain and Ireland is about fifteen yards per head, while the average of that of her colonies is about three. It is absurd to suppose that this difference could make any essential difference in the consumption of an article of the first importance, under natural circumstances; but if it could, how immense would be the difference in our home consumption that would result from the adoption of a system that would enable the farmers of Tennessee and Ohio to exchange produce with the planter—food for cotton—giving acre for acre, instead of, as now, bushels for pounds—the difference being swallowed up in the transit of the food and the cotton to and from Liverpool and Manchester.

The harmony of interests, throughout every part of the Union, is perfect, and all that is needed is, that all should understand it. What injures the farmer injures the planter; and *vice versa*, the planter cannot suffer without injury to the farmer. Throughout the South, planters are abandoning cotton and substituting wheat, and that at a moment when the European market

for food is to be closed against the hundreds of millions for which, *as it is asserted*, we now need a market.

As some may doubt the existence of this harmony, I propose now to show how the present course of action, as relates to food, tends to destroy the market for cotton.

The people of Germany and Russia, after feeding themselves, have food to sell. With the produce of that food they desire to buy cloth. The higher the price of the food they sell, the more cloth they can buy. The great food market, at present, is England. If we fill that market, the price of food will be low, and the German can buy little cotton. If we do not, it may be high, and he may buy much cotton. We are now converting labourers, miners, and mechanics into farmers, diminishing the consumers and increasing the producers. The more consumers we have, the less food we shall have to spare, the higher will be the price of food in England, and the greater will be the quantity of cotton that can be purchased by the German and the Russian. The more producers we have, the more food we shall have to sell, the lower will be its price, and the smaller will be the quantity of cotton that can be produced by the German and the Russian. All this seems to me so obviously true, that it needs only to be stated. It has been seen that the price of food is here maintained by a home demand resulting from the great immigration now taking place, and we know that if by causing a demand for labour for the building of furnaces and mills, and other similar works, we could cause the immigration to go next year to half a million, there would be a further demand for grain, that would carry prices to a point still higher. Let us now suppose the immigration of next year to be 600,000, producing a further increase of demand for food to the extent of twenty or thirty millions of dollars, and see what would be the effect upon the planter. The Canadian would find a market for his grain within the Union, for the price would be sufficiently high to enable him to pay the duty. The value of agricultural labour everywhere would rise with the increasing price of food; and every farmer, at home and abroad, would consume more cloth, because he could sell the products of his labour higher, *i. e.* he could obtain more cloth and iron for it. The German, the Russian, the Irishman and the Englishman would be larger customers than now, while the home demand would absorb enormous quantities that would otherwise go to England to augment "the stock on hand," by the size of which is measured the price to be paid for the ensuing crop.

Our present policy tends to destroy the home market and the foreign market too. It diminishes the productiveness of labour on both sides of the Atlantic, and all that is taken from the surplus that remains after feeding the labourer, is so much taken from the fund that would otherwise go to the purchase of cloth or iron.

THE TOBACCO PLANTER.

A brief examination of the tobacco trade will show precisely similar results. In 1822, we exported 83,000 hogsheads, and the price was \$74 82, yielding about \$6,200,000. In 1845, we exported 147,000 hogsheads, and the price was \$50, yielding \$7,350,000. Deducting the extra expense of transportation to the place of shipment, the producers received less for the large quantity than they had done for the small one. From 1830 to 1835, the export averaged 90,000, and the amount was \$6,200,000, yielding to the producer, on his plantation, as much as the larger quantity in 1845. The sum of \$6,200,000, at these two periods, would have brought in Liverpool:—

1830 to 1835, pieces of cloth, 3,300,000, or tons of iron, 200,000
1845, " " 3,900,000 " 130,000

The planter is giving almost two-thirds more of tobacco for twenty per cent. more cloth, although his brother planter is almost ruined by the low price of cotton; but in the case of iron it is worse, for he gives two-thirds *more* for thirty-five per cent. *less*. In the first period, he could have two and one-fifth tons for a hoghead; whereas in the last he has little more than one-third of the quantity, or seven-eighths of a ton. It is obvious that he is being taxed by somebody, that he is giving more and receiving less, and that the cause of this is, that the productive power enabling the people outside of the Union to pay for tobacco, does not keep pace with the power of those inside of the Union to produce it. What is his remedy? It is to increase the number of people inside of the Union, with whom he can have perfect freedom of trade. The Englishman will consume six pounds for one that he can now consume, burdened as it is with a tax of 3s. per pound; the German will do the same; and so will the Frenchman, when he can free himself from the tax imposed upon him by the government monopoly. The more men that are imported, the more will be transferred from the list of small customers to that of large ones, and the less will be the cost of transportation from the place of production in Maryland or Virginia, Ohio or Kentucky, to the place of consumption, Philadelphia or New York, Berlin or Vienna; for the larger the bulk and value of the commodities transported west, the lower will be the charge for transportation eastward. Between the interests of the tobacco planter, the manufacturer, and the ship-owner, there is therefore perfect harmony.

THE SUGAR PLANTER.

The sugar trade presents the same state of things. The agriculturists of the world are giving a constantly increasing quantity of labour as the equivalent of a constantly diminishing one. The following exhibit of the movement of the great sugar market, since the commencement of the present century, shows that the amount paid for sugar has been constantly diminishing, while the price of the English commodities given in exchange has varied in a degree so much less that whereas in 1801 the consumption of 14 $\frac{2}{3}$ persons paid for a ton of iron, that of 24 was required in 1831, and the proportion has been steadily increasing. The whole sum paid in 1847 for this important article of food, by *twenty-nine millions* of people, was less than was paid in 1801 by sixteen millions, and the contribution per head was less than one-half, and yet the difference in the price of iron was, by comparison, trifling.*

* The case is the same in regard to all other of the products of the land. In 1841 and 1842, the colonial timber received in Great Britain averaged 931,000 loads. In 1846 and 1847, the average was 1,150,000 loads. In 1848, 1,102,000 loads. The price, mean while, had, however, fallen almost ten per cent.,† and the colonist, after paying the extra freight, must have received less, in money, for the large than for the small quantity, while the price of iron had advanced fifty per cent. His timber would therefore yield him about forty per cent. less weight of iron to be employed in the further production of timber. The writer from whom I quote gives many other facts to show that the increased supplies have been obtained at "the same cost of labour," or that means have been found "for making our [their] own industry more productive."‡ It does not matter which, but of the two conditions he "prefers the former." The former is the one, and being such it is scarcely to be wondered that the poor and over-taxed colonists desire annexation.

† Edinburgh Review, July, 1849.

‡ Ibid.

Population.	Quantity retained for consumption.—cwts.	Price per cwt.	Total value consumed.	Price per head.	Price of iron.	Number of persons fed with sugar in exchange for a ton of iron.
1801 16,338,000	3,639,000*	45†	£8,188,000	10/2	£7 5‡	14.2
1811 18,500,000	3,818,000*	41 6‡	£7,888,000	8/6	£8‡	18.8
1821 21,200,000	3,529,000*	34†	£6,000,000	5/8	£6 10‡	23
1831 24,029,000	4,233,000	23.8‡	£5,000,000	4/2	£5‡	24

I do not extend this table, for Mr. Tooke's list of prices does not come down to the end of the next decennial period, and I have no other that appears to correspond with it. Enough, however, is given to show that the people of the United Kingdom were steadily giving less iron for more sugar. In 1801 the planter could have 1,100,000 tons as the equivalent of 180,000 tons; but in 1831 he could have but a million of tons as the equivalent of 210,000. From that time to the present there has been an unceasing effort to cheapen sugar, and yet there were taken for consumption (including the large quantity exported after being refined) in the years 1845 to 1847, only 15,900,000 cwts., or an average of 5,300,000, being only 45 per cent. more than in 1801, while the population had increased 90 per cent. It is obvious that the power of consumption diminishes, and yet the prices of the world are fixed in England. The consequence of this is seen in the fact that 5,800,000 tons, in 1847, would command but £7,200,000, while 3,600,000 in 1801 would command about £8,200,000.

The return to labour employed in the cultivation of cotton has fallen so low that the Carolinian tries wheat, and the Mississippian sugar. Sugar falls so low that the West Indian turns his attention to coffee. By the time his trees have become productive, the price has so far fallen that he cuts them down, and then the price rises, while that of sugar falls.§ Thus is it ever and everywhere. The producers are over-ridden by the exchangers, and so must they continue to be while they shall continue to have the price of their whole crops determined by that which can be obtained for a small surplus in the constantly diminishing market of England.

The production of sugar does not vary greatly from a million of tons, and the yield to the planter may be about \$70, the whole amount being about \$70,000,000. Taking the cotton crop at \$80,000,000, we have the sum of \$150,000,000 as the value of the labour of that large portion of the population of the world employed in producing these two articles, so essential to the comfort of the rest of the world. The equivalent of this sum in 1845 and 1846 might have been (delivered on the plantation) about 2,500,000 tons of iron, the article that, of all others, is most essential to the maintenance, or the increase, of the productive power.

A ton of bar iron is not the equivalent of twenty-five days' labour, properly employed among the coal and iron fields of the Union, but even at that rate, one man would give more than twelve tons per annum. To produce the whole quantity required to pay for the cotton and sugar crops of the world would require, then, the labour of 200,000 men. Is it not obvious that the agriculturists of the world are taxed to a vast amount for the support

* Porter's Progress of the Nation, Vol. III. page 32.

† Tooke's History of Prices, Vol. II. page 413. Mr. Tooke gives the various prices of the year. I have taken what appears to me to be the average.

‡ Ibid. p. 406.

§ From this cause it is that coffee is now scarce and high, and sugar abundant and cheap, the price of the latter in London being but about 24s. How much is left for the poor producer that has paid freight from Benares, far up the Ganges, and all the charges of all the persons through whose hands it has passed, may readily be imagined. Twenty pounds of sugar must be required to pay for one of cotton, in the form of coarse cloth.

of the fleets and armies, the merchants and brokers, the paupers and the noblemen of Great Britain, and is it not incumbent upon them to free themselves from such a state of vassalage? To *add* to the present annual production of the Union in the next seven years, *the whole quantity* of iron required to pay for the cotton and sugar crops of the world would require not the slightest effort, and so far would it be from diminishing the supply of food, or cotton, that the production of both would increase at a rate more rapid than was ever before known, for the farmer and the planter would thus obtain a market on the land for the products of the land, and good roads to go to distant markets, and the chief part of the time and labour now wasted in the work of transportation might be given to the work of cultivation. We should then import hundreds of thousands of men to make roads through the States already organized, instead of exporting hundreds of thousands to California, and then squandering our resources in the premature effort to make a road by which to communicate with them.

It is time for the cotton planter to look this question fully in the face. Had he a market, he could in a brief period increase the crop to 5,000,000 of bales. Having no market, he is compelled to limit the cultivation, and thus it is that the product of such a region as South Alabama does not increase. In 1839 it yielded, bales, ... 551,000

From 1845 to the present time the average has been only 440,000*

The people who should be raising cotton, or making iron, are perpetually on the move, producing nothing. The picture presented in the following paragraph, taken from one of the papers of the day, is the one that meets our eyes look where we may:—

"The tide of emigration continues to pour through our city southward and westward with increasing volume. The rush is tremendous. Throughout the day, from early dawn until late at night, long trains of wagons, families, and forces are seen moving through our streets. Both our ferries are kept in continual operation. Mr. Fairhurst, one of the proprietors of the lower ferry, has kept a memorandum of the movers crossing at that point during the last two weeks. In that time *three hundred and fifteen wagons* have crossed the river, of which number 214 were bound for Texas, 89 for the southern counties of our own State, and 12 for Louisiana. It is estimated that, counting whites and blacks, there are about five persons to each wagon. This would show that within the last fourteen days about fifteen hundred movers have passed this one ferry. We have no record of the number crossing at the upper ferry, but if it is as large as the lower, the number of movers passing through our city during the present month will be about *six thousand!*"
—*Little Rock (Arkansas) Democrat, Nov. 16.*

Those men are flying from the rich and unoccupied soils of lower Carolina and South Alabama to the high lands of Arkansas and Texas, thus increasing their necessity for transportation, and diminishing their power to obtain it. Let them fly as they may, they cannot fly so fast as to prevent the increase of the cotton crop, the average of which must soon stand at 3,000,000 of bales; but where then shall the planter find a market? Among the sugar planters of the world? Like himself, they are ruined for want of a market. Among the coffee growers? Like himself, they are ruined for want of a market. Among the wheat growers? The Russian wastes his crop for want of a market, and the American is competing with him for the possession of that of England, while the Englishman is ruined by competition with both.† Is it among the operatives of England? They are

* De Bow's Commercial Review, Vol. VII. page 446.

† The following passage from one of the journals of the day, presents a tolerably correct view of the course of things in Great Britain. The producers are being ruined, and all are becoming consumers, and thus it is that Ireland, exclusively agricultural, furnishes a market for food. It is forgotten, however, that every diminution in the amount of pro-

endeavouring to underwork the Hindoo, and their power to purchase cotton or sugar diminishes daily. They need a market for their labour. Is it in France? France is always at war, and produces little. Her consumption of American cotton in 1842 and 1843 was 717,000 bales. In 1846 and 1847, only 575,000.*

Look where he may, he must see that the producers of the world want markets, and that for want of them they are becoming poorer instead of richer, and that their power to obtain even the machinery of production is daily diminishing, the price of iron in sugar, coffee, cotton, wheat, indigo, or any other of the products of the earth, tending steadily upward, and yet there is no single commodity in the world that would tend to fall so steadily, but for the existence of *the monopoly system*. The supply might be increased to an indefinite amount, and with a rapidity far exceeding that of any other of the products of the earth. Make a market for it requiring annually 10,000,000 of tons, and this country could supply it in ten years. Double or treble it, and we could supply the whole in reasonable time, for our capacity is without limit, and we could command the services of half the labourers of Europe. Here it is, *and here alone*, that the planter can look for a market capable of expanding itself in the ratio of the increase in his power to furnish supplies. Here, and here alone, can the market for coffee, silk, indigo, and all other of the products of the world be so far enlarged as to enable the coffee planter, and the cultivator of silk and indigo to quadruple their consumption of cotton.

duction diminishes the amount of commodities that can be given as the equivalent of the products of others, and that those who buy food have little to give for clothing, and must go in rags:—

“The prospect of an Irish demand for corn is improving, and also that the dependence of England, on foreign supplies, will gradually increase. The land monopoly of England, by adding the item of rent to be paid by the occupier and producer, made requisite a tax on the foreign article, which should protect him against the proprietary producers abroad, who had no rent to pay. The removal of this tax has now thrown directly upon the English farmer the whole burden of his rent, which was before borne by all consumers of bread. This burden will be enhanced, by the abrogation of the navigation laws, which, by diminishing freights, will make the competition between the cheap rentless lands of other countries, and the landlord-burdened soil of England, more severe, and, as a consequence, much of the poorer soils will be abandoned, while the expensive system of culture before resorted to, to increase the quantity of protected corn, must be relinquished as unprofitable. A considerable diminution in the product of a *good* English harvest, as compared with former years, may then freely be looked for. We have given above an official table of the quantity of food taken for consumption in England, for the year ending August, 1849. That was in aid of the harvest of 1848, which was “good,” but the acreable product, from causes alluded, could not have been as large as usual. The result of this is, that the small farmers, with small crops at low prices, cannot meet tithes, taxes, poor rates, and rent, the last the most onerous; and their capital and numbers are annually diminishing, swelling the numbers of bread-consumers in other employments.”

* Merchants' Magazine, Vol. XVII. page 562.

THE WOOLS OF VARIOUS STATES AND COUNTRIES COMPARED.

WE trust not a word is needed from us to remind our readers, and especially those who were, or may be, interested in the improvement and extension of wool husbandry in the United States, how fortunate it is, that a gentleman of science, with the necessary leisure and appliances, such as are possessed by Mr. BROWNE, should have turned his attention to the philosophy of the subject.

Hitherto the qualities of wool have been too much a matter of loose comparison and conjecture, without any certain test. The mathematical precision with which its fineness is ascertained by Mr. Browne, leaves no room for cavil, while it has established for our country, incontrovertibly, the capacity to produce this great staple of national industry and wealth, of a quality equal to the best in the world. It is another proof, too, how much *science*, and how little the *government*, is ready to do for Agriculture.

Had any one taken half the pains in discovering new and more efficient means of destroying the human race, that Mr. Browne has, in his illustrations of the nature and growth of wool, and the means of improving it, governments would publish his discoveries, and pay him, and honor him, as they do inventors of revolvers and rockets, and authors of military memoirs and maps. Millions for the art of war, and for military reconnoissances, and roads, and pensions, but not a dollar for peaceful arts, and useful discoveries, unless it be a miserable patent certificate that costs the government not a dollar, and that if the invention be worth anything, is sure to be pirated. *So we go!* Ah, we are a wise! a wonderful people!

When Mr. Browne wrote to the Hon. Mr. Reed, he had not received the specimens from Mr. COCKRILL. He since, however, wrote a note to the editor of "The Plough, the Loom, and the Anvil," to apprise him of it. In the meantime, the communication from Mr. Cockrill himself had been received and is appended, to justify the confidence with which he had asserted that the United States is a better sheep and wool country than Silesia or any other *high latitude*, and that as good bucks can be purchased in the United States for \$50, as those in Germany which cost \$1500 or \$2000; offering to show from his own flock in latitude 30 degrees, against all Silesia above 51 degrees north, as he believes that no sheep in a frozen region, and housed so much, can be brought to the perfection that sheep can in Tennessee, if properly bred and managed. There is no doubt with us that the true sheep pastures of the Union lie south of the Delaware. But to show how this vast advantage is appreciated by *Maryland legislators*, we will in our next publish the memorial from farmers of that State to the last Assembly, together with the *names of the committee*, to whom it was referred, and who, from timidity or indolence, did not, we believe, even make a report of any kind!

Philadelphia, March 1, 1850.

TO THE HON. ROBERT R. REED.

DEAR SIR—In your favour of the 27th of October last (inclosing me, for examination, some specimens of wools, for which I beg leave, if not too late, to return you my thanks), you are pleased to say that "you would be happy to have the result of my observations, as my critical examinations will go far with you in settling the disputed question, whether we *can* produce as fine wool as Saxony?" Various unlooked for circumstances, among which was sickness in my family, have prevented me from complying before with your request.

In order to appreciate the importance of the investigations, which I am making, into the nature and properties of hair and wool, I ask permission to refer you to a work recently published by Mr. J. S. Skinner, the indefatigable editor of "The Plough, the

Loom, and the Anvil," entitled, "Sheep Husbandry in the South," by Col. Henry S. Randall, of New York. This latter gentleman, by a series of proofs, shows:—

1st. That wool growing is never likely, permanently and importantly, to increase in any country of Europe, unless it be Hungary, Turkey, and the south of Russia.

2d. That it is more likely to decrease than increase in Great Britain, France, Portugal, and Italy.

3d. That such a decrease is next to certain in Spain and Germany (including Prussia and Austria in the latter), except Hungary and Transylvania; that the decrease will be much more considerable in Germany; that its rapidity and extent will be proportioned to the rapidity and extent with which the market is supplied from countries which can grow wool cheaper, such as North and South America, Hungary, Southern Russia, and Australia.

4th. That wool growing will, undoubtedly, largely increase in Hungary and Southern Russia, and that it *ought to*, in European and Asiatic Turkey, but *will not extensively, until the character of the people and their political institutions are changed.*

5th. That it will also increase at the Cape of Good Hope, Australia, and Van Dieman's land; but that its economical extension in either of these countries is limited, especially if America becomes a competitor.

6th. That no part of the eastern continent or its islands (all things considered), possesses equal advantages for wool growing with some parts of the United States.

I will now proceed with a schedule of the diameters of sundry wools, beginning with the coarse and proceeding to the finest known filaments, in parts of inches.

	Of an inch.
No. 1. I have, in my collection, a specimen of what is called the fleece of the Egyptian sheep; it bears but little resemblance to that integument, and has for its greatest diameter 120, and for its least	281
" 2. Mr. Youatt says that the wool of the sheep of Walachia, in European Turkey, measures	375
" 3. The wool of Lincoln, England (Youatt),	480
" 4. Common American wool from Messrs. Bullock & Davis,	500
" 5. The wool of Leicester, England (Youatt),	500
" 6. The wool of Wiltshire, England (Youatt),	500
" 7. The Cheviot wool, England (Youatt),	500
" 8. The Irish long wool (Youatt),	560
" 9. The wool of Norfolk, England (Youatt),	580
" 10. The Cottswold, England, not given.	
" 11. The American Cottswold; specimen from Mr. Clements, of Philadelphia,	625
" 12. Common American black wool; specimen from Messrs. Bullock & Davis,	625
" 13. Wool of an American Leicester yearling buck; specimen from Mr. Clements,	625
" 14. English South Down (Youatt),	600
" 15. Another American Leicester; specimen from Mr. Clements,	703
" 16. Wool of Van Dieman's land (Youatt),	750
" 17. Wool of Odessa (Youatt),	750
" 18. Wool of Ryeland, Herefordshire, England (Youatt),	750
" 19. Wool of Australia (Youatt),	750
" 20. English Merino, Lord Weston's pick lock (Youatt),	750
" 21. Mexican wool in my collection; specimen from Messrs. Bullock & Davis,	781
" 22. Wool from Buenos Ayres; specimen in my collection from Messrs. Bullock & Davis,	781
" 23. English Saxony wool (Youatt),	840
" 24. American Cottswold or New Oxfordshire; six specimens in my collection, presented by Mr. Raybold, of Delaware State,	625, 703, and 859
" 25. American South Down; specimen in my collection from Mr. Clements,	859
" 26. Another of the same,	937
" 27. Wool of an American merino ram, three years old, first shearing (length eight inches),	937
" 28. Another variety American Leicester, specimen in my collection, from Bullock & Davis,	937
" 29. Deccan (East India) wool (Youatt),	1000
" 30. Full-blood Saxony wool, from Saxony; specimen in my collection from Bullock & Davis,	1041
" 31. Three-quarter American Saxony; specimen, in my collection, from Bullock & Davis,	1041
" 32. Wool from the buck of the herd of Dambrau, of Saxon Electoral origin, but highly improved by bucks of Prince Lichnowsky; specimen in my	

	Of an inch.
collection, collected by Charles L. Fleischmann, Esq., for the U. S. Patent office, in 1845-6,	1093
" 33. Wool from a buck of Mr. Thaer at Moeyelin near Berlin; specimen, in my collection, collected by Mr. Fleischmann,	1093
" 34. Wool from a nine month old ram; lamb from the flock of the Duke of Leitchenan, in the possession of the Hon. Robt. R. Reed, of Pennsylvania,	1093
" 35. American South Down wool from "Privena," exhibited in Albany, N. York; specimen in my collection from Mr. Clements,	1093
" 36. American full-blood Saxony, black wool; specimen, in my collection, from Bullock & Davis,	1171
" 37. Wool from buck "Napoleon," valued at \$1500, owned by M. Heller, of Chrzelitz, whose flock is considered the only rival to those of Prince Lichnowsky's; specimen, in my collection, collected by Mr. Fleischmann,	1200
" 38. Wool from a buck of the herd of Reti, Hungary; specimen, in my collection, collected by Mr. Fleischmann,	1200
" 39. Washed wool from a ewe of the stock breed of Prince Lichnowsky, at Kuchelna; specimen, in my cabinet, collected by Mr. Fleischmann,	1250
" 40. Unwashed wool from a buck of Roggon, in Mecklenberg; specimen, in my collection, collected by Mr. Fleischmann,	1250
" 41. Wool from a buck of Mr. John D. Patterson, of New York; specimen, in my collection, from Mr. J. S. Skinner,	1250
" 42. Wool from a ewe, the dam of the ram of the Hon. Robert R. Reed, in the possession of Mr. J. G. Strean, of Pennsylvania; specimen, in my collection, from Mr. Reed,	1250
" 43. Washed wool from the flock of Mr. Strean, of Pennsylvania; specimen, in my collection, from the Hon. R. R. Reed,	1250
" 44. Wool from the flock of Mr. Mark Cockrill, of Tennessee; specimen, in my collection, from Mr. J. S. Skinner,	1250
" 45. Unwashed wool from a ewe of Prince Lichnowsky's stock breed at Kuchelna; specimen, in my collection, obtained by Mr. Fleischmann,	1562
" 46. Wool from a buck of a herd near Moscow, Russia; specimen, in my collection, obtained by Mr. Fleischmann,	1572
" 47. Wool from a buck of Prince Esterhazy, in Hungary; specimen, in my collection, obtained by Mr. Fleischmann,	1572
" 48. Washed wool of a ewe of Chrzelitz,	1572
" 49. Pennsylvania wool, No. 1, and No. 2; specimens in my collection from Messrs. Howston & Robinson, of Philadelphia,	1572
" 50. Wool from a ewe of the herd of Guettmannsdorf, celebrated for its thorough blood and fine large sheep; specimen, in my collection, obtained by Mr. Fleischmann,	1580
" 51. Wool from a buck of the herd of the Viceroy of Hungary, at Altsuth; specimen, in my collection, obtained by Mr. Fleischmann,	1600
" 52. Wool from a buck of the herd of Piskowitz, owned by Baron Zedlitz; specimen, in my collection, procured by Mr. Fleischmann,	1600
" 53. Full-blood American Saxon, and half blood American Saxon; specimens in our collection, presented by Messrs. Bullock & Davis, and believed to be from Washington Co., Pennsylvania,	1833
" 54. Wool from a buck of a flock of Gross Herlitz, Silesia; specimen, in my collection, obtained by Mr. Fleischmann,	1875
" 55. Wool from a buck of the herd of Count Caroli, Hungary; specimen, in my collection, obtained by Mr. Fleischmann,	1875
" 56. Wool from another sheep of Mr. Thaer; specimen, in my collection, obtained by Mr. Fleischmann,	1875
" 57. Wool from a ewe of Col. Randall, N. York; specimen, in my collection, sent by himself,	1875
" 58. Wool from five ewes of Mr. S. Patterson, of Pennsylvania; five specimens, in my collection, from Mr. J. S. Skinner, from	1250 to 1875
" 59. Wool from a buck of Col. Lee's flock, Pennsylvania; specimen, in my collection, presented by the Hon. R. R. Reed,	1875
" 60. Wool from the flock of Mr. Robert Allen, of Bedford County, Virginia; five specimens, in my collection, from Col. B. B. Long, of Philadelphia,	1250 to 1875
" 61. Wool obtained by Mr. Fleischmann, from a wool merchant at Dresden, as a sample of Electoral wool, from Saxony; specimen, in my collection,	2186
" 62. Wool from five bucks of Mr. S. Patterson, of Washington Co., Pennsylvania; specimens, in my collection, from Mr. J. S. Skinner,	1250-1875-1875 to 2186

Of an inch.

To these I will add for the purpose of comparison :—

- " 63. Wool of the Arabian camel; specimen, in my collection, from Mr. David Samuels, of Philadelphia, ... 2500
- " 64. Wool from the Vicunia of South America; specimens, in my collection, presented by the same, ... 2500

Having accompanied me in the foregoing enumeration, you will be pleased to assist in arriving at the following necessary conclusions:—

1st. England cannot raise *fine* wool, and as her manufactures of superfine goods require an immense amount of it, they must, to that extent, be dependent upon foreign countries. The common country wools of England, as has been above shown, are, comparatively, *very coarse*; for example, that of Lincoln being only 480; the Leicester, Wiltshire, and Cheviot are only 500; the Irish long wool only 560, and the Norfolk, 580. On the other hand, common American wool ranges from 500 to 625.

2d. The wool of the English breeds of sheep increases in fineness in the United States, without the aid of any crossing; for example, the Leicester, which, in England, is 500, in the United States, increases to 625, 703, and 937. The South Down, which, in England, is 660, increases in the United States to 859 and 937.

3d. Foreign (continental) sheep introduced into the United States increases in fineness, but in England such breeds decrease; for example, the Merino, Lord Weston's English Merino picklock is only 750, but in the United States it has been known of more than double that fineness. Wherefore, the United States will be enabled to furnish England with the *fine* wools she cannot raise.

4th. The United States can raise finer wool than they can in Walachia, Mexico, Buenos Ayres, Deccan (East Indies), Van Dieman's Land, Odessa or Australia—the finest wool in these places not exceeding 1000, which (at least in one instance) has been doubled in the United States.

5th. We have now arrived at the most interesting portion of this comparison, viz., that of the finest wools of the United States, with those of Russia, Mecklenberg, Prussia near Berlin, Prussian Silesia, Saxony and Hungary, being those foreign countries which have the reputation of raising the finest wool in the world.

The finest of the foregoing specimens from Russia, have a diameter of	1572
Of Mecklenberg, ...	1250
Of Prussia near Berlin, ...	1875
Of Prussian Silesia, ...	1875
Of Saxony, ...	2186
Of Hungary, ...	1875

Now look upon this. In New York, Pennsylvania, and Virginia, we have produced wool of 1875, and in Pennsylvania, of 2186. **SO THAT THE UNITED STATES, IN RESPECT TO RAISING FINE WOOL, IS NOT BEHIND THE MOST FAVOURED COUNTRY IN THE WORLD.**

The sheep, like the sheep's master, improves in this free and happy country.

It is true that, in order to institute a comparison of extreme fineness of filaments, I have quoted the wool of the Arabian camel, and that of the South American Vicunia, at 2500; but it must be recollected that the Vicunia of South America, although commonly called "a sheep," belongs to the genus camel; however, therefore, this great fineness of fibre may act as an inducement to introduce this animal into the United States, the comparison of his wool is no more disparagement to the American fleece than to those of Prussia, Hungary, and Saxony, which it excels in an equal degree.

I have then answered the "disputed question" referred to in your letter. **WE CAN PRODUCE AS FINE WOOL AS SAXONY.** And I hope you will henceforth agree with Col. Randall, in his sixth proposition above quoted. But while I agree with that gentleman that "no part of the eastern continent, or its islands (all things considered), possesses equal advantages for wool growing with some parts of the United States," I respectfully differ with him in the propriety of *crossing stocks of different species*, of this most useful animal.

If we are to become one of the greatest wool growing countries in the world, we must found a **PERMANENT RACE, POSSESSING THE GOOD QUALITIES OF BOTH PARENTS**, and not a continuous production of hybrids, which will be the inevitable consequence of following Col. Randall's advice. We are about to enter upon a great politico-economical race with all nations, and what I desire to see is a *fair start*. One radical error in the commencement may destroy years of toil and end in labour unrewarded. I offer to show my fellow-citizens that there are distinct species of sheep which ought never to be amalgamated.

I am, with high respect, your obedient servant,

P. A. BROWNE.

TENNESSEE WOOL.

Nashville, April 11, 1850.

FRIEND SKINNER.

DEAR SIR—I enclose you a letter from Professor Browne, of Philadelphia. Will you please let it have a place in your valuable paper, "The Plough, Loom, and Anvil." The samples of wool I sent you did not properly represent my flock of sheep. I desire the wool men of America not to be prejudiced against the South as a wool-producing country, but, on the contrary, believe, myself, that the low latitudes have many and great advantages over the North, such as will not allow the North to stand the competition, if the business will only be properly commenced in the Southern States.

Yours, respectfully,

MARK R. COCKRILL.

Philadelphia, April 2, 1850.

TO MARK R. COCKRILL, Esq.

DEAR SIR—I have been sick ever since the receipt of your letter;—this is the first day I have been able to resume my studies.

The five specimens of wool sent for examination are as follows:—

No. 1, marked "best that could be had in Germany," has a diameter of the 1.1875th part of an inch. This is very fine, but I have finer specimens, both Saxony and American.

No. 2, marked "Ewe, four years old, ten months growth, my flock." This has a diameter of 1.2186th part of an inch, but the filaments are not uniform; there are some strands that are not thicker than the 1.2500th of an inch, but they are irregular and not well-formed.

No. 3, marked "Ewe, two years old, ten months growth, my flock." This has a diameter of 1.1572th part of an inch, and is rather knotty.

No. 4, marked "Ewe, three years old, ten months growth, my flock." This is a beautiful wool, even, and with a diameter of 1.1875th part of an inch.

No. 5, marked "Ewe lamb, eleven months old, my flock." This also is a clean, even fibre, and is of the extreme fineness of the 1.2186th of an inch.

I am your obedient servant,

P. A. BROWNE.

ON THE NATURE AND GROWTH OF WOOL, AND THE INFLUENCE OF THE DIFFERENT SALVES IN PROMOTING ITS GROWTH.

I.—By ROBERT M'TURK, Esq., of Hastings Hall, Dumfriesshire.

[Gold Medal.]

WOOL is the covering which nature has assigned to the sheep; and while it is to be found on other animals also, in them, however, it is not a distinguishing feature, but forms a finer and warmer covering at the bottom of the longer hair or bristles.

But the description of wool which is the subject of the following observations, is produced exclusively by the different breeds of sheep reared in this country, and which is applied to the various purposes of our manufactures. It furnishes also a suitable protection against the cold and wet, which frequently prevail on those elevated districts, of which the sheep may be regarded as the peculiar occupants. No animal, certainly, has been more bountifully supplied with a covering, neither can the covering of any other animal be rendered available to supply so many of the wants, and promote so many of the conveniences, of civilized life.* Its uses, in this respect, have been more or less known from the earliest period to the present time; and the skill and ingenuity of our artizans are daily extending the list of these uses, by the invention of new fabrics, and by the perfecting of those previously known, and also by the discovery of improved machinery. It does not, indeed, appear to us, that there would be any assignable limits to this progressive improvement, if the endeavours of the breeders of sheep to improve the quality of the fleece were not attended with difficulties, arising from the severity of winter, and the very variable nature of the climate in this country. In most of the attempts hitherto made to improve the fleece, so far as fineness of staple is concerned,

* The wool of the camel, including the Llama, the Alapaca, and the Vicunia, and the wool of some varieties of goats, as the Cashmere, &c., might be rendered as available, and means should be taken to introduce them into the United States.

there has been a decided diminution of the quantity; and the attempts at this description of improvement have often been carried so far, in some flocks, as not only to reduce the weight of the *clip*, but seriously to affect the appearance and value of the flock, being considered too fine, or bare in their coats, for withstanding the storms of winter.

For, as we shall afterwards endeavour to show, if the coat is not sufficiently warm to afford the necessary protection, the constitution of the animal is impaired, and the quality of the fleece deteriorated.

If we examine the fleece of the sheep, we shall find that the staple varies in length and fineness, according to the particular breed of sheep, and the part of the fleece from which it is taken. Upon a more minute examination, with the aid of a microscope of moderate power, it is evident that it consists of filaments, analogous in their nature to horn,* more or less translucent, with a silvery lustre, according to the particular variety of wool. It is also minutely serrated, and the filaments proceed from a series of glands,† which have their seat within the skin of the animal, bearing a striking resemblance to a plant with a bulbous root.‡ It receives a daily addition to its length at the point§ where it is united to the glands, and when it issues from the skin its formation in every respect is complete. The extent of the growth depends entirely upon the improvement in condition which the animal is making at the time; for if it is not receiving a sufficient supply of food, the secretion of horny matter from the gland or bulbous root will be less, and the pile of wool of an inferior quality. The microscope will also show the different periods when the deficiency has occurred,|| for the wool then produced does not exhibit the same uniform glistening appearance, but at these parts is more opaque, and seems shrivelled and contracted, and is very liable to break, in consequence of which, it is rendered not only of less value, but altogether unfit for combing, and many other valuable purposes.

If this view of the nature and growth of wool is correct, it must, of course, follow, that none of the various salves or external applications can tend, in a direct way, to promote its growth, seeing that the glands which constitute the source from which it grows, receive their whole nourishment from the minute blood-vessels which are everywhere ramified over the inner surface of the skin.

It is a fact known to every grower of wool, that the better the sheep are fed, and the higher they are in condition, the more abundant will be the clip.¶ We also find a further illustration of this truth, in the effect which good feeding has upon the growth of both horn and hoof. These substances, as we have already stated, are of the same nature as the wool, and their growth, like most other animal substances, depend entirely upon the same principles; though they are to the eye, more perceptible, especially in so far as the horn is concerned, in the lighter coloured and more tender portion which is nearest the root; and although the growth of the hoof is less perceptible in this respect, it is equally so in its effects, for we have good reason to believe (from some experiments which we have lately made with regard to the nature of *foot rot*) that the too rapid growth of the hoof which arises from good feeding is one of the most fertile causes of this disease. It has been alleged by some, that the addition to the length of the pile does not take place at the part where it is united to the gland, but that it is pushed out at the top, in the same manner as the growth of the willow takes place.** The truth of this statement may easily be tested by selecting a portion of the wool when growing, and staining it with a solution of the nitrate of silver, at an equal distance from the root and the top, and, in the course of a month, by inspecting the same, when it will be found that the distance between the root and the mark is increased, whilst that between the top and the mark remains the same. This fact requires no illustration to a store-farmer or shepherd. They know well that the white and unstained wool which has grown between smearing and clipping, and which is familiarly known to them as the *rise*, is never found at the top, but always at the root, or at that part which is nearest the skin, and, if measured with accuracy, it will inform us as to the amount of growth from the middle of November, when the salve was applied, till the middle of July, when the wool was clipped. If the animal is of the black-faced breed, and pastured on a farm of medium quality, it

* Wool and horn do not resemble each other under the microscope.—*Edit. P. L. & A.*

† By *glands* we suppose he means the *follicle*, but we never heard it called by that name before.—*Edit. P. L. & A.*

‡ For the knowledge of this fact I am indebted to the courtesy of the person in charge of the magnificent microscope, by Dollond, of London, on the Calton-Hill.

§ The *anterior* extremity is called the *point* or *apex*.—*Edit. P. L. & A.*

|| This is an error; the microscope makes no such disclosure.—*Edit. P. L. & A.*

¶ This is a good remark, founded in truth.—*Edit. P. L. & A.*

** Wool always increases in length by growing at the posterior extremity.—*Edit. P. L. & A.*

will have gained about two inches; if a yeld-ewe, a little more; and, if a ewe rearing a lamb, a little less. We should be inclined, at first sight, to think that wool of this kind, under the circumstances mentioned, grows at the rate of a quarter of an inch in the course of a month; but, if the growth has been more particularly attended to, it will be observed that an inch, or the half of the whole, has taken place in the last two months, viz., from the middle of May to the middle of July, and that it will progress, at least, at the same rate till December, when the weather becomes more inclement, and the food less abundant.

There is an opinion entertained by many that the application of salve* to the skin has a direct tendency to increase the growth of the wool, in the same manner as top-dressing has to promote the growth of the grasses on the land, where it is applied; and this very erroneous view of its effects is not unfrequently strengthened by the various recommendations of the different salves which we see advertised in almost every newspaper, before the commencement of the salving season.† Now, it can have no such effect; for, if we think but for a moment, we shall see that the finer and more valuable parts of the top-dressing are washed down into the soil by the showers of rain which fall, and then the soluble part is received as food by the spongioles of the roots or mouths of plants, and, with a slight change, it ascends to the leaves in the character of sap, and is there elaborated, and fitted as nourishment for the upholding and increase of the different parts of plants. But it is very different with regard to any substance that is applied to the skin of an animal. In that way, it can never find access to the system, so as to augment any of its products; on the contrary, we are to look for the increased growth of wool to the richness and abundance of the supply of nourishment alone which the animal receives in the ordinary way, and the degree of comfort which, in other respects, it enjoys. Although an application to the skin may stimulate the part, and occasion an increased circulation for a time, it does not follow that this unnatural action will be attended with a corresponding increase of wool, or any other animal formation, to show that the system has derived advantage upon the whole. On the contrary, unnatural excitement of the functions is almost always followed by a corresponding degree of impaired action; and we cannot think that the covering of the skin with salve, or unctuous matter, can have the effect of producing a more healthy action, when it must for a time close the pores of the skin, and, in some degree, obstruct perspiration, without which health cannot be long maintained. But had any of the salves, in reality, a direct influence in promoting the growth of wool, that influence could only be exerted during the time it continued in contact with the skin, and we shall find that this is never more than from ten to fourteen days, as it is by that time removed from the skin to the extent of one-sixteenth or one-eighth of an inch, exactly the amount of the progress which the wool has made in that time, and to which it more particularly adheres. If the salve has been of a hot or burning nature, as is frequently the case with some of the varieties of tar (but more especially with the black thin tar from Stockholm), the scarf-skin is often raised along with it.‡

There is still another and more decided proof that the salves in this respect do not possess the influence ascribed to them; for, if they did, would not the growth be greater during the season when the salves were upon the wool and near the skin, instead of being less than during any other period of the year; and we have already shown that the growth of wool from the middle of November to the middle of April (five months) is not more, on hill pasture, than one inch, whereas that the seven next months will pro-

* The salves spoken of, so far as they are instrumental in destroying vermin are useful; that they tend to increase the growth of the wool, like top-dressing to soil, is ridiculous. If they are recommended to keep the animal warm and to protect him from dampness, we must say that we would prefer housing and covering; but, if they must be resorted to, why not copy nature, and make the salve resemble, as much as possible, the *yolk*, which is known, by analysis, to be an *ammoniacal soap*. The best ointment, as recommended after the experience of a skilful shepherd, is equal parts of *train oil* and *tallow*, say forty pounds of the two mixed for one hundred sheep; tobacco, tar, arsenic, &c., are not only useless but mischievous.

† As being little inferior in efficacy to the celebrated Macassar Oil.

‡ We have known sheep frequently die from the influence of tar, particularly if driven and heated immediately after having been smeared. We have also observed that the Cheviots are more liable, in this respect, than the black-faced breed; and even when skinned after death, the *sheds* may be traced over the whole body, where the tar had been applied, by the dark red inflammation which the parts had undergone. Indeed, the application of tar is always accompanied with more or less fever, and the sheep (in the phraseology of the shepherds) deadened or dulled by the tar; and, for this reason, they are always anxious that the stock should be smeared sufficiently early, to have the fever over before the rams are turned out to the ewes.

duce half an inch each, or three and a half inches in the course of that time.* Now, in five of these months, there is no salve upon the wool, and during these, it notwithstanding makes the greatest progress. At the same time, it is true that these are the months in which there is the greatest supply of food on hill pastures. Although we have endeavoured to show that none of the salves afford nourishment to the wool, and thereby promote its growth, still they exert an indirect influence, which has the effect of affording protection to the animal against cold, wet, and the attacks of vermin, and tend in this way most materially to promote its comfort and thriving.† The influence which any salves have then (if not of an injurious nature) must be in proportion to the degree of comfort the animal derives from their application; consequently those which are most adhesive in their nature, and retain their hold of the wool longest, and bind the fibres most together, must evidently afford the greatest protection. But as the quality of the clip is a matter of not less importance with the grower than the quantity, he must not apply any mixture that cannot be removed by scouring, or that will in any way prove injurious to the staple of the wool, or in any other respect unfit it for the purposes to which it is to be applied. Hence, it has been the study of both the growers of wool and compounders of salves, to find out some mixture that possesses these advantages, and the conflicting statements which are daily advanced with regard to the merits of these salves, show the common error into which the growers and compounders generally fall, namely, of endeavouring to discover a salve that would be most answerable for every object and situation. In so far as the destruction of vermin is concerned, this end will be obtained by the application of any of the salves in general use. In so far as the protection of the animal is concerned, against the inclemency of the weather, this will depend on local circumstances, whether the farm lies high, and is much exposed to storms of wind, rain, and snow, or whether it lies low and warm, and is occasionally exempted from those storms which more frequently prevail in the higher and colder districts. It is clear that in the latter description of farms the finer kinds of salves and oils may be advantageously used, as on these situations less protection is necessary, the wool, by their use, being not unfitted for taking the lighter colours. It is not less clear, however, that on farms of the former description, the sheep will stand in need of all the protection which the most adhesive salve can afford; and it cannot be doubted that those compounded of tar and butter or palm oil, possess this property in a higher degree, and are, therefore, better fitted for all high and stormy situations; for, if the animal has not a sufficient protection, as well as a supply of food, its condition will first become stationary, and it will then begin to lose flesh. This is neither more nor less than the more essential or vital parts of the system drawing upon those deposits of fatty matter, which were laid up in store while the animal had a supply of food which not only sustained the system, but enabled it to lay past a store for any deficiency that might afterwards occur. Before any demand, however, is made by the system on these deposits, the organs by which they were secreted have ceased to perform their functions, and the absorbents are the media through which the fat is again restored to the circulation, in order to sustain those organs which are of a more vital nature. When this change in the body occurs, the balance between the deposition and absorption of nutritious matter is reversed, and that supply of secretion that went to the formation of wool, and which was laid up in the glandules of the roots, is exhausted, the formation of the pile is incomplete, and exhibits the shrivelled and contracted appearance which we have already described; and as the withdrawal of this secretion is more or less considerable, the wool is, in proportion, deteriorated in quality and diminished in quantity. But this will, in a great measure, depend upon the condition at the time when the deficiency of nourishment commences. If, in very inferior condition, the whole fleece will come off, and if not so bad, it will only be the finer and more delicate piles that will give way, and particularly on those parts of the body where there is most friction, as, for example, on the neck, the belly, the

* How directly this bears on the question of the comparative advantages of the north and south in our country, for sheep husbandry.—*Ed. P. L. and A.*

† The truth of this fact is well established in an excellent paper by James Menteath, Esq., yr. of Closeburn, in the 49th number of the Quarterly Journal of Agriculture, on the advantages of shed feeding, and also by experiments lately made by Charles Stewart, Esq., of Hillside, and by Mr. James Wilkin, Tinwald Downs, with regard to the relative merits of shed and field feeding, from which experiments it clearly appears, that the lots of sheep fed in sheds by these gentlemen were in higher condition, even with a consumption of nearly one-fourth less turnips; thus showing that the greater degree of comfort which the shed afforded was more than equal to the fourth of turnips, and the higher condition on a less supply of nourishment could arise from no other cause. We are, therefore, thus enabled to form an estimate of the advantage arising from a proper attention to this important subject.

legs, and shoulder; where the wool is coarser, and where there is less friction, it retains the fleece longest. Wool that has not been so far injured as to break in the staple while on the animal, is often so much weakened that the part, where the deficiency occurred, is, upon examination by the wool-stapler, discovered to be unsound, when it has not strength to withstand the trial to which he subjects it, and much loss will, from this cause, ensue in the manufacturing of it. To this cause is also to be attributed the felted or milled state of some fleeces; for, although the deficiency of nourishment has not been so great as to cause the whole wool to give way and peel off, yet many of the finer piles have, and this is always close to the root, where the process of formation was going on at the time that the supplies were withdrawn. The end of the pile thus disengaged immediately gets entangled among the others, and, in consequence of the serræ having their inclination towards the top, the pile must get more and more entangled at every movement of the animal, and the felting of the fleece is thus accomplished. In this case, the stole of wool appears always thinner at clipping time, it being only the stronger piles which are left to be cut. The fact of the pile giving way, under the circumstances which we have stated, has led to the general but very erroneous conclusion that the sheep sheds its fleece every season, as the horse casts its coat, while, in reality, there is no such tendency, except what arises from the causes to which we have already alluded.

In support of this fact, we have sent two specimens of wool, the one taken from a two-year old sheep, and the other from a three-year old, the former *twelve inches and the latter eighteen inches*, neither of which had been previously clipped, but which had received a regular and abundant supply of food.* We can, also, with confidence appeal to any person who will carefully examine the fleece of a sheep that has been well fed during winter, and compare it with one which has been deficient in this respect; and we are convinced that he cannot withhold his testimony to the truth of this observation with regard to the nature of the growth of wool, however much it may be at variance with the general impression, even at the present time.

CORN, COB, AND SHUCK CRUSHER.

Nashville, March 27th, 1850.

MR. J. S. SKINNER, Editor of the Plough, Loom, and Anvil.

DEAR SIR—The February number of your most valuable work has at last reached this office, and been handed to subscribers. Mr. H. W. S. of Gallatin, Hinds county, Miss., can be furnished with a corn, cob, and shuck crusher, that will pulverize eight or ten bushels per hour, with two common mules. It is a very simple machine and very easily kept in order. I have been using one for seven years, and during that period, it has never cost me a dime, except for lard or oil for the gudgeons. It was patented by Mr. James Rowe, now of Florida, and can be procured of me for one hundred and sixty dollars. The one I am using cost me three hundred dollars, and I would not take double that sum for it, if I could not procure another. This machine is manufactured in Cincinnati, Ohio; the freight to Vicksburg will be eight or ten dollars; the wood work can be done by any carpenter. If you think this communication will be of service to Mr. H. W. S., or any other person wishing to get a corn, cob, and shuck crusher, you can give it a place in your paper.

Respectfully,

J. SHELBY.

Gov. Hammond, of South Carolina, bought the patent right of one, a Yankee invention, which answered perfectly well, and with great liberality placed it in the way of being introduced to general use. We are sorry to have mislaid a memorandum of the particulars. The desideratum, it will be observed, was a machine to grind up the *shuck* as well as the cob. There are those who believe the shuck to be the most nutritive portion of the fodder of Indian corn.

* Mr. P. A. Browne has, in his collection of wools, a specimen of the first shearing of a three year old American Merino which is eighteen inches long.—*Edit. P. L. & A.*

THE GREAT GRAIN MARKET OF THE WORLD, AND THE CANADA RECIPROCITY BILL.

HAVING sacrificed the iron manufacturers, whose product trebled in little more than four years, furnishing a vast market for the productions of the farm and the plantation—and the coal miners, whose products also trebled in little more than four years, with vast advantage to the farmer and the planter—and having crippled the makers of cotton and woollen cloth—and having thus put a stop to the building of furnaces and rolling mills, to the opening of mines, and diminished by three-fourths the erection of cotton and woollen-mills, under the idea that the “great grain market of the world” was to furnish a better market than that which was being supplied at home, it may not be amiss to call the attention of our readers to the present state of that “great” market, with a view to enable them to calculate what the farmers have *lost* by relinquishing the protection afforded them by the tariff of 1842, and comparing it with what they have *gained*.

Had the tariff of 1842 remained in operation, the domestic product of iron in its various forms, in the past twelve months would have been greater than it has been by at least half a million of tons, worth at an average of \$60 per ton,	\$30,000,000
The demand for coal, East and West, would have been greater than it has been by at least three million of tons, worth on an average, \$3,	9,000,000
The demand for cloth would have required the consumption of much larger quantities of cotton and wool, the sale of which would, in its manufactured form, have been greater than that of the quantity actually made by at least	15,000,000
The demand for cloth, and iron, and coal, would have required the construction of furnaces and mills, and the opening of mines, requiring a capital of at least	15,000,000
	\$69,000,000

And great as is this sum, we might with safety almost double it—and then every dollar of it would be found to *represent labour*, which, in its turn, represents only the *produce* of the farm and the plantation consumed in the various forms of food, cloth, house room, which represents lumber, and bricks, and stone, which are themselves but the representatives of food and clothing—and thus might we go on to show, that the farm and the plantation obtain markets to the full extent of the value of all the product of labour applied to the conversion of the raw materials of the earth into the various forms in which they become fitted for the uses of man.

So much has the farmer lost in that form alone; and to this might be added that the same policy has driven hundreds of thousands to seek California, there to eat the grain of Chili, and has so greatly diminished immigration to us from foreign countries, that the home demand for food to supply the wants of those who will arrive this year, instead of *increasing* to the extent of eight or ten millions of dollars, will, to all present appearances, *be less by six or eight millions*—and thus it would be easy to show that the home market for the products of the land of the present year is less than it would have been by, at the lowest calculations, *one hundred millions of dollars*, and probably vastly more, because of the adoption of the policy which looked to the substitution of the distant market for that which was, but a little while since, so rapidly

growing on the land for the products of the land. So much have we lost. What have we gained?

We have now before us an account of the export of wheat, flour, corn, and corn meal, from New York to the "great grain markets" of Europe, in the last six months, and it is as follows:—

	Domestic.	Foreign.
Wheat, bushels, - - -	82,364	138,454
Flour, barrels, - - -	76,068	96,393
Corn, bushels, - - -	1,354,855	
Corn meal, barrels, - -	355	

Such is the "great" market the farmers have obtained in exchange for what they have sacrificed, and the prospect is, that the future will be worse. We have on our table the English journals of March, in which are given the prices of wheat in the various markets of England, and they vary from 32s to 36s per quarter, and for extra qualities from 36s to 40s. A fair average is about 35s, which gives \$8 40 for the *quarter*, equal to nine and one-third bushels of sixty pounds each, and the price, in England, is, therefore, *ninety cents* a bushel.

The same journals give us the price of the markets of the continent, from which we see, that at Hamburgh, good qualities had been delivered free on board at 35s, and the freight to London was 1s, which would give 36s, or \$8 64 per quarter, or *ninety-four cents per bushel*, as the price of *heavy* northern wheat, delivered in that "great grain market." Lots weighing *sixty pounds*, which is much higher than our average, had been put on board at 33s, which would give, as the cost, *delivered in London*, ninety cents per bushel. Barley weighing fifty-three pounds, had been delivered on board at 13s 9d, or less than *thirty cents* per bushel, and from the depressed condition of the English market, the prospect was that prices would be lower.

The potato rot seems to have disappeared, and the season having thus far been a remarkably fine one for the operations of the farmer, the prospects for the home crop in "the great grain market" were deemed remarkably fine, and in the event of the result realizing the expectations that were formed, there was reason to believe that the fall in the price of both English and foreign wheat would even yet be considerable. It is clear from this, that our farmers can, this year, have *no* foreign market to take the place of the *vast one* they have closed. What, then, are their prospects, if they have, as the late Commissioner of Patents assured us was the fact, *four hundred millions of bushels* for which a market must be sought abroad?

Such, fortunately for them, is not the case. The surplus for which a market has not been created at home is small, and a very brief period of protection would make a market in the land for *all* its products in the form of food. Our crop last year was somewhat smaller than usual, and the vast extent of the domestic market is shown in the fact that the price at home is greater than in any market of Europe; the consequence of which is, that the export of domestic grain and flour has ceased. Not so, however, with *foreign* grain and flour. The Canadian, being subjected to the *monopoly system of England*, has made, and can make, no market on the land for its products, and Canadian grain and flour, as we have shown, pass through New York on their way to England. Seeing this great fact, that the American farmer, being still, to a certain extent, protected, obtains a higher price than can be obtained in the markets of Europe, the Canadian farmer seeks for reciprocity, that is to say, he desires to sell his wheat and his flour in a protected market, and then to buy his cloth and his iron in England, to be imported free of duty—and what he seeks he is likely to obtain, for the representatives in Congress of the farmers and planters of the Union, seem desirous to try

the experiment of burning the candle at both ends. They have already closed the mills and furnaces, and the mines, and thus diminished the *demand* for food, and now they propose to admit foreign food free of duty, thus to increase the *supply*. Having killed the farmer's customers, they mean now to kill the farmer himself.

No exertion will be spared to secure the passage of the bill through Congress, and when passed, it will be found to constitute a *bounty on the land and labour of Canada*, to be paid, good easy souls, by the *farmers and planters, and land owners and labourers of the Union*. The people of the West are abandoning their farms to seek California, and land is diminished in price. The demand for labour is small, and immigration to us from abroad, by which value is to be given to land, is diminishing. We need only now to offer a bounty on the transfer of labour and capital of Canada, and then the measure of *free trade* will be full, but the revenues of the farmer and land owner will be small, and their purses will be empty. It is time that they should open their eyes to the folly of permitting their representatives thus to trifle with their interests. If they do not do this, and it is not done soon, it will be too late.

MUNIFICENT AND JUDICIOUS ENDOWMENT.

ELLIOTT CRESSON, Esq., the enlightened and zealous Secretary of the Colonization Society, through the agency of the Franklin Institute, has given one thousand dollars as a fund on condition that from its nett income the Institute shall prepare and award a gold medal, for such important inventions and improvements in the useful arts as they shall, from time to time, deem best calculated to advance *home industry*, and consequently the real independence of the country.

Mr. Cresson has also recently offered, through the Franklin Institute, who have acceded to the proposition, to bear all the expense of four silver medals, to be awarded to the largest amount of coffee, sugar, cotton and palm oil respectively, produced in Liberia, in 1851.

PROPORTION OF LIVE AND DEAD WEIGHT IN SHEEP.

	South-down Sheep.	Leicester Sheep.	Worcester Sheep.	Wiltshire Sheep.
	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.
Weighed alive - - -	155 0	152 0	161 0	175 0
Skin - - - - -	17 8	20 0	23 0	23 0
Fat - - - - -	13 2	11 8	12 8	13 8
Head and pluck - - -	10 8	9 6	12 0	14 0
Entrails - - - - -	13 4	11 2	15 0	17 10
Blood - - - - -	5 14	6 0	8 0	8 2
Four quarters - - -	92 6	92 0	89 0	97 0
	152 10	150 0	159 8	173 4
Waste; viz. urine and evaporation	2 6	2 0	1 8	1 12
Bones, clean - - - -	6 5 $\frac{3}{4}$	5 9	6 0	9 8
Fat, with the kidneys in - -	8 6	5 1	6 12	4 3 $\frac{1}{2}$
Kidneys - - - - -	0 4 $\frac{3}{4}$	0 4	0 5	0 5
Proportion of live and dead weight	20 gives 11 $\frac{3}{4}$	20 gives 12	20 gives 11	20 gives 11

SALT—ITS USE RECOMMENDED IN CURING TOBACCO, WITH NOTES BY THE EDITOR.

Tye-River Mills, Nelson, Va., April 17, 1850.

MR. JOHN S. SKINNER:—

Dear Sir—Thinking that an experiment of curing tobacco with salt might not be unacceptable to you, inasmuch as it would possibly interest some of your readers who are engaged in its culture, I will endeavour to describe it.

All agriculturists know that to place vegetable matter in such a condition as to prevent speedy decay, it is necessary to dry it: salt having a powerful attraction for water seemed to me applicable for that purpose to a plant so abundant of water as tobacco, and from the size of the stem so much more difficult to cure than the ordinary plants of the farm.

I felt disposed, however, to try it first on that of the most indifferent quality, in order that the loss might be small if the experiment failed. In 1846, a very wet year with us, I had some tobacco growing on a flat piece of land which suffered exceedingly from repeated and heavy rains; and as it was certain, if cured in the ordinary way, by fire, it would furnish only indifferent lugs, I resolved to try it with salt. It was cut, put on sticks, and hung on a scaffold near a curing house. A few days after it was taken down, laid on the grass, and salt from a sifter applied, first on one side, then on the other, to as great an extent as would adhere. The tobacco was then hung on the tier-poles in the house to the amount of six hundred sticks, being as much as the house would hold, and more than would have been placed there if fire had been intended as the curing agent. In a short time after the salt was applied drops of water appeared on the stalks, stems, and leaves of the tobacco, and a few hours after it was hung in the house the water commenced falling on the floor. The dripping continued several days, and the ground below was kept during the time as wet as it would have been by a light shower of rain.

After the dripping ceased the tobacco began to dry, and was soon cured, nothing more being done. Not a leaf was lost by house-burning, *i. e.* decay. The following winter it was stripped and bulked, and in the spring pressed (or prized, as the planters [properly] express it), for market. At that time it possessed a fragrance far beyond tobacco cured by fire, and was always more moist and flexible than the fire-cured. The hogshead that contained it was sent to Richmond, with the residue of my crop, in the spring of 1847, it being my intention to ship the salt-cured to England. At Richmond it was refused by the inspectors for being too moist. The succeeding fall it was shipped to a house in Liverpool to which I had previously shipped some tobacco of far better original quality. Tobacco being very low in England at that time, the house was instructed not to press it on the market. It arrived in England "in good condition, free from mould," according to the statement of the English merchant. From circumstances unnecessary to detail here, it was not sold until February, 1849, two years after it had been placed in the warehouse at Liverpool. From the account of sale now before me it sold for 3½d sterling per pound. Two other hogsheads of tobacco of superior quality, cured by fire, sold at the same time, one for the same price, viz: 3½ sterling per pound, the other at 3¾.

In order to test the matter still further I obtained the favour of an eminent manufacturer of tobacco at Lynchburg to make some experiments with a portion of it, to ascertain its capacity of resisting putrefaction. His letter to me of August, 1847, says: "The parcel of tobacco I have had manufactured. The condition of it was *very good*. It was not manufactured until

twelve or fifteen days ago, for the reason that I wanted to see how it would stand for a while with the stem in. It made no difference in it. In my next sweating I will carry it through the regular process, and then let it stand for some time. I have no doubt it will answer very well, and that next summer it will go through a natural sweat with perfect safety." It did so, and I have now a box of it (1850), opened a few days since, perfectly sound, but tasting slightly of salt.

Inferior tobacco, cured in this manner, I think would answer well for the German markets, where salt is extensively used in the manufacture of snuff, as stated by the select committee of the House of Representatives in their report of July 25, 1848, in which they quote from the report of Joshua Dodge, appointed as special tobacco agent by the president, and sent to various states of Germany (see *National Intelligencer*, July 19, 1849).

Great loss has been sustained by tobacco becoming putrescent, either during the voyage, or in the European warehouses. That I think might be avoided by curing with salt. The risk, too, of curing by fire will be obviated, and the constant vigilance indispensable where that agent is used, would be no longer necessary. The expense of the salt is not as great as the wood, where that article is inconvenient, and the attendance of a hand to watch the fire. And there can be no objection, on the score of flavour, in curing tobacco with salt when it is destined for markets where salt is used in its manufacture.

Yours, respectfully,

THOMAS MASSIE.

We take pleasure in giving place to communications such as the preceding, because they serve to exhibit something new in the way of agricultural practice and inquiry. For ourselves, we have sometimes said, and oftener thought that there is no branch of agricultural industry more susceptible of being benefited by scientific investigation and practical experiment than that of *making and curing tobacco*. In the first case, the chief desideratum is to obtain an early and adequate supply of plants. In the other, to secure a certain colour and consistency or quality of the leaf, depending on the uses to which it is to be applied. In respect to certainty in the supply of plants, who has attempted any expedients, except a discriminating selection of the site and soil for the seed-bed, fine tilth, early sowing, and protection from frost? And these are precautions so obvious that there is really no extraordinary merit—no particular proof of forecast or sagacity in adopting them; and yet these very palpable measures are so often neglected, or imperfectly executed, that some planters are as proverbial for their failure as are others for their uniform success. Why is it that such men as Mr. T. and Mr. S., or Mr. H., or Mr. B., in Prince George's, and the Leaches in Calvert County, can always plant early, and have plants to spare? But is there no room for improvement? Are there no appliances yet untried that would secure a supply of plants, beyond the chance of disappointment? Has anything been attempted, to make sure of it, beyond what has been the common practice time out of mind? In every other art, in every other industry, we see improvements constantly making. The tanner, the shoemaker, the batter, the coachbuilder, the shipbuilder, the dyer, the cabinetmaker, the iron master, all—all are "racking their brains" for some improving invention—*en avant*—go ahead, is the motto of every trade and calling but that of the cultivation of the soil.

There are certain measures that we should like to see put in force, in the belief that the planter might always by these, have an *abundance of plants*. Let the seed-bed in the first place be thoroughly *well drained*; so that not a particle of *superfluous* moisture would ever remain on, or in it. Then let its surface soil be thoroughly intermixed, and its colour *darkened* with *pulverized charcoal*.* This would at once attract heat, and retain moisture and ammonia, and we doubt not, much increase and accelerate the growth of the plants. And where the bed can be made near water, it might be easily watered with a cart and contrivance such as is used for watering the streets in large cities. Spaces might be left in the bed for the horse and the wheels to travel in, without touching the plants. But care must be taken never to use water at a temperature below that of the

* The value of charcoal in agriculture is getting to be so well understood, that in our next we will give instructions for preparing it, from personal observations in boyhood.

soil on which it is applied, lest the roots should be chilled and the plant be injured instead of benefitted.

Then as to the quality of the tobacco, in reference to colour and inherent consistency or flavour; very much we know depends on the composition and quality of the soil and climate—but has any attempt been made to ascertain *how much?* and in what the connection and dependence of the one on the other consists? What experiments have been instituted to determine the effect of early or late planting on the colour and consistency of the leaf? Who can tell, as the result of actual trial, the effect in these respects, of high or low, early or late topping of the plant? and how much depends, too, upon exactness in the degree of maturity at the time of topping or cutting? Should not all these things, with every intellectual planter, be matters of actual investigation, and experiments, for rational amusement, as well as for the sake of the “almighty dollar?” Does not this subject open a worthy and inviting field for the practical application of chemistry?—that noble art which, since the days of Sir Humphrey Davy, has done so much to enlighten, invigorate, and reward labour in this and other departments.

When it was announced that *cotton* might be substituted with economy and effect for “the villainous compound” of saltpetre and brimstone, with what alacrity the government with all its power, and all the tests of its scientific laboratories (for military uses) stepped forth to see what could be made of it. Now, only let it be understood that tobacco, of a certain color and texture, could be made the most efficient means of “killing our enemies,” and the government would follow up the investigation as eagerly as young hounds pack and open when laid on the trail of a roasted bone.

To return to this interesting suggestion of our correspondent for divesting tobacco of its redundant moisture by the agency of salt, and thus accelerating the process of curing and guarding it more effectually against putrefaction; we have only to suggest one difficulty which occurs to us. Suppose the whole house to be hung with tobacco thus salted, or any considerable number of tier above tier, would not the dripping, which, says our correspondent, “for several days, kept the ground as wet as from a slight shower of rain,” be apt to damage all the lower tiers? And another.

Would not the sweepings of the tobacco houses and the inspection houses make excellent manure for seed-beds, just as its leaves and trimmings are found to be the best, if not an all-sufficient manure for the grape vine—the manure which nature in fact provides for everything?—*Edit. P. L. & A.*

SEX OF EGGS.

DURING the last summer, I wanted to raise a stock of poultry from a favourite hen and cock. They were of the black-breasted red game breed. The cock was purely bred, but the hen was a little crossed. The eggs she laid were of a deep buff colour, and as she was the only hen I had which laid yellow eggs, they were easily collected. When I had 26 eggs, I put 13 of the largest under a brood hen to be hatched; one egg got broken, the other 12 had chickens in them; one, however, died in the shell, and so the number was reduced to 11. Of these, one died before I could ascertain its sex; of the 10 remaining, 8 were cocks and 2 were pullets. The 13 smaller eggs I also put under a broody hen, and she hatched me 10 chickens. Of these, 8 were pullets and 2 were cocks. There is no difference in the shape of the eggs laid by the same hen; in size they vary but little. I observe this peculiarity, that although the hen has yellow legs and the cock black, yet, throughout four broods, which I have had from the same hen and cock this summer, every yellow-legged chicken has proved a cock, and every black-legged one a pullet. *Nomen fictitium.*

SMOKING STATISTICS.—In the year 1848, eight millions one thousand four hundred and forty-nine pounds one shilling and four pence were spent by the people of this kingdom in tobacco! If the tobacco had been worked into *pig-tail* half and inch thick, it would have formed a line 99,470 miles long—long enough to go nearly four times round the world.

GARRETT AND SON'S PATENT HORSE-HOE.

THESE gentlemen appear now to stand at the head of inventors of agricultural implements in England. Twenty prizes have been awarded them by different agricultural societies for their patent horse-hoe, and down to the latest trial it seems to have no competitor. We never read of anything of this sort, that we do not wish for an importing society of such like new and promising inventions, since none of our societies or institutes will undertake it. We should covet to be counsellor in such cases to wealthy and liberal men, such as Mr. Lenox of New York, the purchaser of the original manuscript of Washington's Farewell Address, or the munificent Mr. Cushing of Boston. They are the sort of men to do good to agriculture, when they take it in their head to turn to it for amusement and usefulness. But we are getting away from Garrett and Son's patent horse-hoe.

Among a great number of flattering notices of it, we find the following in a last month's number of the *Mark Lane Express*.

"Twenty prizes have been awarded to R. Garrett and Son by the Royal Agricultural Society of England, and other societies, for this invaluable implement. If there be one implement more than another to which R. Garrett and Son could confidently direct the attention of the agriculturists, it is to their Patent Horse-Hoe, from a firm conviction, founded on long experience, that any farmer who has once experienced the advantages resulting from its use would on no account be without it. But perhaps the following extracts from the reports of the Judges of Implements, at the various meetings of the Royal Agricultural Society, will speak more to its efficiency than it would become the manufacturers to do:—

"At Liverpool, in 1841.

"Messrs. Garrett and Son's Hoe deserves the notice of the agriculturist as an implement that will greatly tend to give an horticultural finish to field operations. It is adapted to all the prevailing methods of drill culture, either for the cleansing of crops, drilled upon the level surface or on ridges, the axle of the wheels being movable at both ends, to suit the varied intervals between the rows of plants; and as each hoe works on a separate lever, the weeds are effectually destroyed, however uneven the surface of the ground, each hoe being kept at a uniform depth by means of regulating keys. The swing steerage adapted to this implement is a valuable addition to horse hoes, as they may thereby be guided with the greatest precision, perfectly scarifying the intervals, without the possibility of injuring the corn or plants."—*Vide Royal Agricultural Society's Journal*, vol. ii. Appendix, p. 110.

"At Norwich, July, 1849.

"HORSE-HOES ON THE FLAT.—For this prize there was no one to compete with Mr. Garrett's well-known implement, which on this occasion fully sustained its previously well-earned reputation.

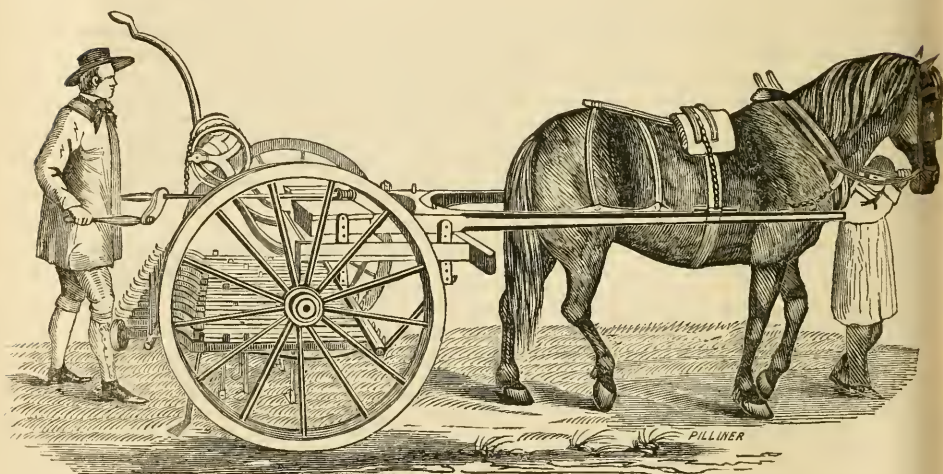
"HORSE-HOES ON THE RIDGE.—The Judges feel bound to notice Mr. Garrett's double ridge hoe, which did its work in a most satisfactory manner; and to those farmers who use a double ridge drill, which it is best adapted to follow, it is a great acquisition. By having additional knives, it is convertible into a hoe for corn, or root crops on the flat.

"The following is an extract from a letter written by P. Pusey, Esq., M. P., to the Council of the Royal Agricultural Society, on horse-hoeing flat-drilled turnips (*vide Royal Agricultural Society's Journal*, vol. iv. p. 77). After writing upon the merits of the hoe, Mr. P. remarks:—As any mere trials, however, are less satisfactory than the actual work on a farm, I have obtained an account of its working from practical authority, and the following statement of its performance will, I trust, be satisfactory. Several farmers, I know, regard this horse-hoe as one of the best implements lately invented. On an arable farm of 400 acres, the price, which varies from 19*l.* to 13*l.* 10*s.*, might be saved by its use, I should think, in the first season."

"Extract from the writings of Hewitt Davis, Esq., 3, Frederick Place, Old Jewry, London:—'As Garrett's horse-hoe is calculated to work a most important reform as regards the cleaning of land, and as I have practically tested its utility, I may be permitted to bring it under the consideration of your readers. By its use all corn sown in rows, from 9 inches upwards, may be hoed in a superior manner, and at an expense of only one shilling per acre. Having at first great doubts of the possibility of any implement drawn by a horse being used in the narrow intervals of cereal plants, I began by buying one. I have now four; and that I may apply it also to my young clovers, I have had made a new drill on purpose to put in the clover seed midway between the rows of corn [meaning grain]. My practice for many years has been to hand-hoe in the spring all my corn, as well to move and lighten the ground as to get rid of the weeds. The use of the horse-hoe has the advantage over the hand-hoe, besides saving of expense, that its work

is much more perfect; the depth it penetrates is greater, and ten acres a day may be done with a horse, and man and boy. Farmers are far too little alive to the mischief that weeds among their corn do them, still less to the fresh life and vigour that a moving of the earth round a growing plant affords; in this they may, with great advantage, take lessons from gardeners; and the implements of Messrs. Garrett enable them very effectually, and at little cost, so to improve their practice.”

The following cut of this famous hoe is a much better engraving than the one from which it was copied, and which we find in the *Mark Lane Express*. Who can undertake to say that this implement, so much valued in a wheat-growing country, where thirty bushels to the acre is as common as twelve in ours, would not be found equally valuable with us? Has anybody tried it? In England they commence using it about the first of April, and ascribe much of its valuable effects to its giving the wheat a good working or tillage, as well as to its destruction of grass and weeds.



THE CORN-WORM—HOW TO PREVENT ITS RAVAGES.

JAMES H. GILL says, in the *Ohio Cultivator*: “I have never been troubled with this worm much. My plan for defeating them is, to stir the ground as soon as the corn is all up and keep at it, from day to day, until it is too large for these destructives. I generally, after getting the corn say four inches high, try to have it ploughed every ten days, until it begins to tassel—if the soil is very rich, say about eight days. I never stop ploughing for drought, and never plough when *wet*. My method of planting is, to have two of the best and most reliable hands that I can get, to drop after one plough, and three next best to cover after them. I generally drop four grains on an average to the *hill*—if the ground is moist cover about three inches; if dry, about four inches. My object in having so many hands follow one plough is, that they can take their time, and do their work just as I tell them. I never have any occasion to replant.

“I scarcely ever hill my corn more than is sufficient to smother the weeds. You have noticed, no doubt, that there is a short *joint* near the ground, almost as hard as wood. My opinion is, that nature designed this for the special purpose of supporting the stalk and ear above it; and, from observations that I have made, I think it very bad policy to cover it up with soil.

“This system of managing pays well, though it may seem to cost more than the usual methods.”

HEAR BOTH SIDES.

For "The Plough, the Loom, and the Anvil."

THE following is an extract from "Arator," a series of Agricultural Essays, by John Taylor, of Virginia, a soldier of the Revolution, Governor, and Farmer.

Speaking of farmers and mechanics, he says (p. 66):—

"We got rid of tythes, and now we clasp banks, patronage, and protecting duties to our bosom. Ten per centum upon labour was paid to a priesthood, forming a body of men which extended knowledge and cultivated good morals, as some compensation for forming also a legal faction, guided by the spirit of encroachment upon the rights and property of the majority. Forty per centum is now paid on our labour to a legal faction guided by the same spirit, and pretending to no religion, to no morality, to no patriotism, except to the religion, morality and patriotism of making itself daily richer, which, *it says*, will enrich the nation, just as the same faction has enriched England. This legal faction of capitalists, created by protecting duties, bankers and contractors, far from being satisfied with the tythe claimed by the old hierarchy, will, in the case of the mechanics, soon appropriate the whole of their labour to its use, beyond a bare subsistence; though, in the case of farmers, it has yet only gotten about four times as much of theirs as was extorted by the odious, oppressive, and fraudulent tythe system."

We have on hand requests from several correspondents to insert passages from various authors holding opinions diametrically opposed to that we teach, which is, that if the farmer and planter would prosper, they must pursue a course tending to make a market on the land for the products of the land. Our motto is, "Hear both sides," for, knowing that we teach the truth, we feel at all times gratified in being able to let our readers see the weakness of the arguments of our opponents. They, on the contrary, never publish a line for us in return, because they cannot refute the argument that is offered for consideration, and they do not desire that their readers should see its strength.

For some time past, all the space we could properly devote to the *political economy of agriculture* has been occupied by the chapters on the Harmony of Interests, as is the case with the present number. Nevertheless, to comply with the desire of one of our correspondents, we give the above passage from the *Arator* of Col. Taylor, proposing to accompany it with a few remarks, the first of which is that we have very small respect for *authority* in matters of this description. That which we can see not to be true we certainly will not believe, because taught by Washington, Franklin, or Jefferson, while that which we see to be certainly true, we will not disbelieve, even though differing from the views of Col. Taylor, Mr. Calhoun, or Mr. Van Buren. We desire to *think for ourselves*, and our first wish is that of inducing the farmers and planters of the Union to *think for themselves*, and to *act for themselves*, instead of intrusting the care of their best interests to demagogues, whose opinions change from day to day as prompted thereto by selfish views, on one day advocating protection to the farmer in his efforts to draw the maker of iron to his side, and on another, the maintenance of the *monopoly system* of England, precisely as the one or the other appears most in harmony with their lust for office.

Our opponents rely exclusively on *authority*. They *dare* not grapple with the facts. They tell us what was taught by Say, Ricardo, Malthus, or by Col. Taylor, but they do *not* tell us how it is that Col. Taylor should have understood what was the true policy of the Union better than General Jackson, who truly said we had been too long subject to the policy of British merchants. Mr. McCulloch is the highest living authority of the school which advocates the system of giving to the people of England the *monopoly* of the supply of iron for the uses of the world, but they cautiously refrain from quoting any of the numerous absurdities into which his system leads him. We have not remarked in any one of their communications, a desire that we should print that portion of one of his works in which he *proves*, and in perfect accordance with the rest of his system, that the expensive wars of England have been highly advantageous in preventing the *excessive* growth of capital. Neither have we remarked the suggestion that we should copy his defence of the system of *primogeniture*, by aid of which the first born son is enabled to sweep off all the property, leaving his younger brothers and sisters to be supported out

of the taxes raised for the support of fleets and armies engaged in carrying on the *advantageous* wars of England. Now, if one sentence from a book written by a man whose name is to be regarded as *authority*, or one part of a system, be good, the whole should be better, and they should give it to us, proving, at the same time, that a system calculated, and intended, for the maintenance of a proud aristocracy, is worthy to be copied by an equally proud democracy.

Authority has filled the world with wars, and has everywhere impoverished and ruined the farmers and planters, taxing them for the maintenance of soldiers and sailors,* paupers and nobles, traders and transporters. *Common sense* teaches that the smaller the number of persons standing between the producer and consumer, the larger will be the fund out of which both are to be maintained. *Uncommon sense* furnishes *authorities* in support of the doctrine that the more widely separated are the consumer and the producer, and the greater the number of soldiers and sailors, ships and seamen, traders, transporters, and demagogues, to be supported by the labours of the farmer and planter, *the producers of all the good things of the earth*, the more rapidly will both farmer and planter increase in prosperity. We go for the *common* sense of the many, and therefore, it is that we do not fear the arguments of our opponents. They go for the *uncommon* sense of the few, and therefore it is that they do not *dare* to enlighten their readers. We are democrats, believing that the people are capable of governing themselves. We should be glad they would define their position, and let us know what is the estimation in which they hold the people before whom they refuse to place the arguments for, as well as those against, the system which seeks the attainment of perfect freedom of trade by means of protection to the farmer and planter in their efforts to break down the monopoly system of England, and bring the loom and the anvil to take their natural places by the side of the plough and the harrow. Are they, too, democrats?

We would strongly recommend to the friend to whom we are indebted for this extract to lay by Col. Taylor's book, and study for himself the things that are passing around him. If a Virginian, let him examine how much the market of the farmer is *increased* by a system which closes the mines and furnaces of the State, and compels the miners and furnace-men to become rivals, when they would gladly remain customers. If a farmer, let him look to the factories that have failed in the last two years, and determine whether the people who are idle can be as large customers to himself and his neighbours, as when they are employed, and well paid for their labour. If a planter, let him determine whether the idle miners and iron-men can consume as much cloth as when they were employed. If a landholder, let him look to the constantly diminishing immigration and determine if the value of land is not deteriorated by a system which tends to diminish the importation of men. If an American, let him look to the fact that every movement of the country is dictated by English banks and bankers, merchants and manufacturers, and let him then determine if the national pride is likely to be gratified by the results of a system which keeps this Union in a condition entitling it to be styled, by English reviewers, the first and best, and most profitable of the colonies of England. "An English colony," says the Edinburgh Review, "in a matured state!" Be he what he may, we beg him for a time to forget his theories, and his reverence for mere names, and to study the facts we have furnished for his consideration. Let him do but that, and we are well satisfied that the day will not then be far distant when he will unite with us in the opinion that if the farmer and planter would prosper, *they can do so in no other way* than that of making a market near the plough for the products of the plough.

DIFFERENCE BETWEEN A TRADESMAN IN THE YEAR 1750 AND 1850:—

1750.	1850.
Man, busy in his shop;	Man at his country-seat;
Wife, brewing malt and hop;	Wife, plum'd and jewell'd <i>ensuite</i> ;
Girl, scorning not the mop;	Miss, aping the <i>élite</i> ;
Boy, active, not a fop;	Boy, on the hunter fleet;
Bills paid, and fortune made.	Claims unmet, and the <i>Gazette</i> .

* "Give me the money that has been spent in war [to force the English colonial system on the world], and I will purchase every foot of land upon the globe. I will clothe every man, woman, and child in an attire of which kings and queens might be proud. I will build a school-house upon every hill side, and in every valley on the habitable earth."

I.—EXPERIMENTS AND OBSERVATIONS ON THE PRODUCTION OF BUTTER.

BY PROFESSOR TRAILL.

THE produce of the dairy forms so important a branch of agricultural industry, that it appears surprising how few attempts have been made to investigate the comparative merits of different methods, employed in various places, for the production of butter and cheese. The qualities of these articles are well known to differ greatly in our own country; yet each district has gone on for long periods to follow its own methods, as if each had attained perfection in the art. This is a proof either of the want of any fixed principles to guide us in the practice of these important economical operations, or of their being unknown to the majority of farmers.

The subject long engaged the attention of the late estimable Dr. Gerard of Liverpool and myself, and for several years, especially in the years 1806 and 1807, we carried on many experiments; in some of which we were assisted by our friend, Dr. Bostock, now of London.

It was originally intended to comprise in our investigations the whole subject of the production of butter and cheese; but our professional avocations, and other interruptions, prevented the completion of our plans, after we had performed numerous experiments on the production of butter. The hope of being one day able to complete them, has hitherto prevented any account of them being published. On the death of Dr. Gerard, the whole papers, in a state of great confusion, came into my possession; and I now propose to lay before the Highland and Agricultural Society of Scotland the principal results which we obtained.

We had a dairy of four, sometimes of five, cows at our disposal; but, after numerous preliminary trials, we found that the numerical results, on the quantity of the butter obtained, were most uniform and satisfactory when we made each experiment on a few pints of milk only. It is true that the proportional yield of butter was sometimes greater from a large than from a small quantity of cream or milk; but the different experiments were found to be most accordant on being repeated, when we operated on quantities not exceeding six English pints for each churning. This probably arose from our being then able to carry on the process in glass vessels, which permitted us to see the progress of the operation, and to collect the product more perfectly; and also from our being enabled to use, in experiments on this small scale, a more delicate balance to ascertain the weight of the butter obtained.

We were also thus enabled to make the comparative experiments on the same milk, on the same day—points of essential importance—as the richness of even the same cow's milk is liable to vary considerably from day to day, as we found from experiment, according to her food, her health, and possibly, too, according to the state of the weather. We also found that the time which had elapsed from the last calving had much influence on the quantity of the butter. The quantity of butter was smallest, and the proportion of cheesy matter greatest, just after calving; and, generally speaking, the milk of those cows which yielded the *least* quantity of milk, was richest in butyraceous matter. Thus the quantity of butter afforded by a quart of milk of a small Alderney cow was considerably more than from a quart of the milk of the large Lancashire breed.

We proposed to ourselves various objects; such as ascertaining accurately the temperature acquired by milk in churning (which, I may state in general terms, without detailing the experiments, we found to range from 5° to 8° of Fahrenheit); the effect of external temperature on the production of butter; the effect of adding water to the churn, as is practiced in many places; but, above all, to ascertain the comparative advantages of churning—

1. Sweet cream alone.
2. Sweet milk and cream together.
3. Sour cream, or that slightly acid.
4. Sour milk and cream together.
5. Scalded cream, or what is called *clouted cream*, as practised in Devonshire.

Each of these five methods of preparing the milk afforded very different results; and, as these investigations seem to be the most important, I shall give them more fully than the rest, selecting, from numerous experiments, those which were most carefully performed, and are, therefore, most worthy of confidence. Although the absolute quantity of butter differed with the season and condition of the cattle, yet as the five methods were practised at the same time, on equal quantities of the mingled milk of four or five cows, the comparative results of each series may be considered as not far from the truth.

It is well known that the milk first drawn from the cow is far inferior in quality to

that last drawn; the latter is technically, in Lancashire, called the *afterings*, and in many towns is generally sold as cream. It seemed also an object of interest to ascertain the comparative quantity of butyraceous matter yielded by the first and last part of the milking, as also the quantity of *caseine* or curd in each.

SERIES 1.—*The comparative Value of the First and Last Portions of the Milk.*—For this purpose a cow was selected which had calved five weeks before, and the experiments were begun on Monday, 26th May, 1806.

No. 1 was the first pint milked.

No. 2 was a pint of the whole milking, after the separation of No. 1 and No. 3.

No. 3 was the last pint of the milking, or *afterings*.

As in previous experiments, *scalding* the milk was found to favour the more perfect separation of the butter, after the three portions were allowed to remain twenty-four hours in the milk-house. They were at the same time placed in earthenware basins, in a pan of water heated to 180° Fahr. They were removed within an hour from the water, when the milk had acquired a temperature of 130°. They were replaced for ten hours in the milk-house, and then examined. No. 1 then showed scarcely any indication of cream. It formed a very thin pellicle only; and the quantity, being too small to be churned, was estimated, from other comparative trials, to be no more than equivalent to five grains of butter. No. 2 was evidently richer to the eye, but the cream was pale-coloured, and, when churned, yielded 181 grains of firm butter. No. 3, The cream, before churning, had a rich yellow tint; the butter produced was well flavoured, and weighed 551 grains. The difference between the richness of the first milk and the *afterings*, in a cow yielding about fifteen pints of milk at each milking, is thus as 1 : 110.

When a cow has calved less recently, the difference between the first milk and *afterings*, however, appears not so great. On the 9th of August, the milk of the same cow, which then yielding fourteen and a half pints at a milking, was subjected to experiment in a similar manner.

The three portions were placed in similar basins in the milk-house for forty hours, and were then scalded till the temperature of the milk rose to 145°. The milk was drawn off next day from below the cream by means of a siphon, and the three portions were churned, in glass vessels, at the same time, for thirty minutes. The butter was soft and very white, although it was allowed to remain for twenty-four hours after churning in cold water. This probably arose from the heat of the weather; the thermometer in the shade then standing as high as 73°. When the butter was washed, and worked to free it from water,

No. 1 yielded 31 grains.

No. 2 " 252 "

No. 3 " 416 "

Here the proportion between the first and last milking is as 1 : 13.42 nearly, or 1 : 13½.

On this occasion, we took the opportunity of repeating an experiment formerly made on the proportion of *caseine* or curd in each of those portions of milk, by coagulating small but equal parts of each by means of rennet, and also by sulphuric acid, which we had found to afford a larger and more firm curd than rennet. Two ounces of each portion of the milk, after the cream was removed, were measured out (that is, one-eighth of an English pint); a teaspoonful of filtered rennet was added to each; to equal quantities of the same milk forty drops of sulphuric acid were added; and the six cups were placed in boiling water for some minutes. They were all firmly coagulated. The curd was separated from each; and, when equally dried, in a heat about that of boiling water, each was accurately weighed.

With Rennet.			With Sulphuric Acid.	
No. 1	gave of dry curd 14 grains.		18	grains.
No. 2	"	" 13 "	18	"
No. 3	"	" 14 "	19	"

This shows, that though the quantity of oily matter differs materially in the first milk and the *afterings*, the proportion of *caseine* or curd differs but little.

The experiments show the *caseine* obtained from each pint to be equal to—

With Rennet.		With Sulphuric Acid.	
No. 1	112 grains of curd.	144	grains.
No. 2	104 " "	144	"
No. 3	112 " "	171	"

SERIES 2.—*Comparative Quantity of Butter yielded by*

- No. 1. Sweet cream churned alone.
- No. 2. Sweet milk and its cream churned together.
- No. 3. Sour cream churned alone.
- No. 4. Sour milk and its cream churned together.
- No. 5. Scalded cream, or Devonshire cream, churned alone.

On the 24th May, 1807, the milk of four cows was drawn in the same vessel, passed through a strainer, and then divided into five portions of six English pints each, which were placed in similar basins of earthenware, in a milk-house, the temperature of which ranged from 55° to 60° Fahr.

Monday, 25th.—The temperature of the air was very hot. 76°; but that of the milk-house, by constant evaporation of water, was kept about 60°.

Tuesday, 26th.—Thirty-nine hours after the milk had been drawn from the cows, it was removed from below the cream of No. 1 and No. 3, by a siphon; and we immediately began to churn the cream of No. 1, and the milk and cream of No. 2, in glass vessels.

No. 1. *Sweet Cream churned alone.*—Having previously found that the addition of a small quantity of cold water to thick cream facilitated the separation of the butter, half-a-pint of water was added to the cream, and it was found that the temperature of the mixture at the commencement of the churning was 62°. In fifteen minutes, butter appeared in grains; the churning was continued for twelve minutes longer, *i. e.* twenty-seven minutes in all, when the temperature of the whole had risen to 70°. The butter was now collected into one mass; but, from the warmth of the weather, was very soft. It was, therefore, put into cold water, and placed in the milk-house until the morrow, when it was worked and washed in the usual way, and weighed 1386 grains. It was of a good colour, and perfectly well flavoured.

No. 2. *Sweet Milk and its Cream churned together.*—The mixture of sweet milk and cream was churned at the same time; but, though cold water was here added, after one and a half hour's churning, no butter was to be seen. The churning was continued for as long (in all for three hours), but without our obtaining a particle of butter.

No. 3. *Sour Cream churned alone.*—On *Thursday, 28th May*, the cream of No. 3, which had been separated on Tuesday, and placed in the milk-house, was now slightly acid, and was churned, after half-a-pint of cold water had been added to it. In twelve minutes butter appeared; and in eight minutes more, it had united into one mass. During the churning, the temperature of the cream had risen from 54° to 63°. The butter-milk was very poor, fit only for pigs. The butter, when well washed, and worked to separate the watery part, weighed 1756.5 grains. The colour and taste were very good.*

No. 4. *Sour Milk and its Cream churned together.*—On the same day, 28th May, the milk and cream which had become acid were churned together, and half-a-pint of cold water was added. It was fully fifty-seven minutes before any butter appeared; and before the churning seemed to be completed, one hour and fifty minutes had elapsed. This shows that much more time is required to churn milk and cream together than to obtain the butter from cream alone. The butter was, in this instance, diffused in small grains, and, when washed and worked as long as any colour was communicated to the water, it weighed 1968 grains. Its colour was rather paler than the last, but its flavour was good.†

No. 5. *Clouted Cream churned alone.*—On *Tuesday, the 26th*, the milk and cream of No. 5 were placed in a vessel of warm water, until the temperature of the milk rose to 156°. In these experiments on scalded cream, we had the assistance of a Devonshire dairymaid to superintend this part of the process. She generally placed the vessel containing the milk among the embers of a low fire; but we preferred water as the heating medium. She judged of the due degree of heat merely by dipping her finger in the milk, and the wrinkling of its surface; and we found that the heat considered by her sufficient generally ranged from 135° to 156°, and was occasionally as high as 160° or 162° Fahr. The milk was drawn from below the cream by a siphon; and the latter was placed in the milk-house, until the following day, before it was churned. It was churned on Wednesday, the 27th. The milk of this portion was very poor, had a scalded taste, and would have been unsaleable.

I may here state, that by churning the milk of No. 1 and of No. 3, we could obtain a few more grains of butter, on some occasions; but we never could obtain the smallest

* The buttermilk from cream alone was poor and thin, in this and in all our experiments, whether water had been added to the churn or not.

† The buttermilk from No. 4—that is, from churning milk and cream together, when slightly acid, is a bland, agreeable fluid, containing much albumen or caseine. It finds a ready market in towns, and is much used in Lancashire as an article of diet. It is therefore a valuable product, which ought to be considered in an economical point of view.

quantity of butter from the milk of No. 5—so completely does the scalding process separate the butyraceous matter from the milk. The butter of No. 5, when well worked and washed, weighed 1998 grains. It had a rich yellow colour, tasted agreeably, and was quite free from the peculiar scalded flavour of the milk.

SERIES 3.—This series, a repetition of the preceding experiments on the milk of four other cows, was commenced on *Thursday, the 25th of June, 1807*, or a month after the last series. As before, the whole milk was mixed, strained, and divided into five equal portions, of six pints each, which were treated as the last.

No. 1. Sweet Cream churned alone.—On the 26th, or in twenty-four hours after the milking, the milk of No. 1 was drawn off by the siphon. The temperature of this portion, at the commencement, was 62° ; and when the churning was finished, had only attained to 65° . The churning required forty-five minutes. Water had been added as before, and the butter was obtained in grains like peas. When well worked and washed, it weighed 1137 grains. Its colour was good and its flavour excellent.

No. 2. Sweet Milk and its Cream churned together.—The sweet milk and cream churned together afforded no butter.

No. 3. Sour Cream churned alone.—On the 29th of June, the cream, which had become sour, was separated by the siphon and churned. The temperature at the commencement was 58° —at the end, it was 65° . The butter was fully formed in forty minutes, and united into one mass. Well worked and washed, it weighed 1247 grains. Its taste was good, as was its colour.

No. 4. Sour Milk and its Cream churned together.—At the same time, the sour milk and cream were churned, with the same precautions as before. The churning occupied two hours; when the temperature had risen from 58° to 68° , or nearly 69° . When worked and washed, the butter weighed 1447 grains. The qualities equalled that of No. 3.

No. 5. Clouted Cream churned alone.—The cream of this portion was scalded on *Friday, the 26th June*, by being heated to 168° , which temperature it attained in one hour, the usual time required for this operation. On *Saturday, the 27th*, it was churned in forty-five minutes; during which process the temperature of the cream rose from 58° to 64° . When well washed and worked, it weighed 1591 grains. The butter in the mouth had a granular feel, which we attributed to the heat rising, by accident, too high; by which an unusual portion of caseine appeared to be separated with the cream. The butter had, however, no peculiar flavour from the process; although the milk would have been unsaleable, from a strong taste of *scalding*.

The general result of these experiments, confirmed by many similar trials is, that the largest quantity of butter is produced from the scalded or Devonshire cream; the next in quantity from the method of churning the milk and cream together, when they have become slightly acid; the third in quantity is afforded by cream kept till it is slightly sour; the smallest quantity is obtained from the sweet cream. We were unable to obtain butter from churning sweet milk and cream together; and in several other series attempted it no more.

In one series of experiments we used as much as $11\frac{1}{2}$ English pints of milk in each experiment; but we then had to churn in vessels of tinned iron; and we did not find the results so uniform as when operating on smaller quantities in glass vessels.

SERIES 4.—This series was intended to decide on the qualities of the butter obtained by the four processes above detailed, as to keeping fresh. These experiments were made, as those of the next series, on the butter obtained in most of our experiments. No. 1 always remained, when exposed freely to the air, longer without any rancid taste than any of the other kinds of butter. No. 3 and No. 4 were nearly on an equality in this respect; if there was any difference it was in favour of No. 3. No. 5 became rancid more quickly than No. 3 or No. 4.

SERIES 5.—Equal quantities of butter obtained by the four processes were salted with equal quantities of salt, then spread thinly on glass plates, and exposed to the air in a dry room. They were inspected from time to time, and it was ascertained that the taint of rancidity always appeared in the following order, commencing with that which showed it first:—

In No. 5, or butter from scalded cream.

- | | | |
|--------|---|---------------------------------------|
| No. 4, | " | a mixture of sour milk and its cream. |
| No. 3, | " | sour cream. |
| No. 1, | " | sweet cream. |

The cause of this difference in their power of resisting decay was believed to depend on the varying proportions of caseine, or curdy matter, in each. To determine this point, another series of experiments was undertaken.

SERIES 6.—Two hundred grains of each kind of butter were kept liquefied, by a moderate heat, in glass capsules; the oily matter was taken up by bibulous paper, successively applied, as long as any oily stain was perceptible; the watery liquid which remained below the oily matter was evaporated, and the solid residue, after being well washed, squeezed between folds of blotting paper, and dried, was carefully weighed. Unfortunately I have been unable to recover the details of this series of experiments; but the following are the general results, which decidedly show that the presence of the greater quantity of caseine in butter coincides with its greater tendency to become rancid. The four kinds of butter afforded caseine in the following order, commencing with that which yielded the most:—

- No. 5, butter from scalded cream.
- No. 4, “ from acid milk and its cream.
- No. 3, “ from acid cream.
- No. 1, “ from sweet cream.

Experiments had been made in *October*, 1806, which proved that *overchurning*—that is, continuing the process after the full separation of the butter—was very injurious to the quality of the butter, although it increased its weight; and these, though made before the experiments detailed above, shall now be indicated, as

SERIES 7.—The cream of six English pints of milk was separated by a siphon, and churned in a glass vessel. The butter was formed in about half-an-hour; but the churning was continued for half-an-hour longer, when the butter had lost its fine, yellowish, waxy appearance, and had become pale and soft, while very little liquid remained in the churn. This butter was so soft that it could not be washed and worked, until it had remained some hours in cold water. It was pale, still rather soft, and, when weighed, = 2566 grains. That this was beyond the due quantity of good butter, from such a quantity of cream, was apparent, when the comparative experiments on the same quantities of the same milk, but only churned till the butter was well formed, gave the following results:—

- No. 1, The sweet cream, overchurned, yielded = 2566 grains.
- No. 3, The acid cream duly churned, “ = 2187.5 “
- No. 4, The acid milk and its cream, do. “ = 2397.5 “
- No. 5, The scalded cream, do. “ = 2671 “

The butter of No. 1 tasted insipid, never became firm, and soon turned rancid. It was found to yield a very unusual quantity of both caseine and of watery fluid, which could only be separated by melting the butter.

Similar experiments were repeatedly made, the results of which showed that *overchurning* is very injurious to the quality of the butter; but it adds considerably to the weight of the article; and it appears to be frequently practised in Lancashire, especially in manufacturing *fresh butter for immediate sale*.

It is a common opinion in Lancashire that considerably more butter is obtained by adding *hot water* to the churn than by using cold water. We had invariably found that the addition of a small quantity of cold water, especially in summer, greatly facilitated the separation of the butter, and rendered it more easily washed. But a dairyman informed us that the same quantity of cream, which will yield 14 lbs. of butter with *cold water*, will afford 15 lbs., or even 15½ lbs., with an equal addition of hot water. This formed the subject of

SERIES 8.—On the 15th of November, 1807, we took, from the mixed milk of four cows, two portions of six English pints each, and set them aside in a milk-house, the temperature of which ranged from 59° to 52°. On the 17th November, the cream was removed from each by the siphon, and churned at the same time, in circumstances as nearly equal as possible, except in the addition of water. The temperature of the cream, at the commencement of the churning, was 55°.

No. 1. To this portion an ounce and a half of water, at temperature 45°, was added. After churning for eighteen minutes, the butter began to appear; two ounces more of water, at 45°, were added, and the churning was carried on for five minutes more. The butter was then worked and washed.

No. 2. To this portion of cream one ounce and a half of water, at 105°, was added; butter began to appear after churning for thirteen minutes, when two ounces more of water, at 105°, were added, and the churning was continued for five minutes more, or eighteen minutes in all. The temperature of the contents of the churn was 71°. This butter was very soft, and, therefore, cold water was added, in which it was worked and washed.

Unfortunately, the note of the weight of the butter in this series has been lost; but I

find it stated that the butter of No. 2 was rather more bulky, and weighed a little more than that of No. 1; that it neither was so firm nor of so rich a colour as the butter of No. 1; and that, on pressing it next day, some watery fluid escaped from it. From this we inferred that the quality of the butter was deteriorated by the addition of hot water; and that the quantity obtained, by this practice, of marketable butter, is not so great as is commonly alleged in Lancashire, although the time of churning is thus somewhat abridged.

The principal results of the experiments above detailed, are—

1. That the addition of some cold water during churning facilitates the process, or the separation of the butter, especially when the cream is thick and the weather hot.

2. That cream alone is more easily churned than a mixture of cream and milk.

3. That butter produced from sweet cream has the finest flavour, when fresh, and appears to keep longest without acquiring rancidity; but that the buttermilk, so obtained, is poor, and small in quantity.

4. That scalding of the cream, according to the Devonshire method, yields the largest quantity of butter; which, if intended for immediate use, is agreeable to the palate and readily saleable; but if intended to be salted, is most liable to acquire, by keeping, a rancid flavour. The process of scalding is troublesome; and the milk, after the removal of the cream, is poor, and often would be unsaleable from the taste it has acquired from the heating.

5. That churning the milk and cream together, after they have become slightly acid, seems to be the most economical process on the whole; because it yields a large quantity of excellent butter and the buttermilk is of a good quality—a point of some importance when buttermilk is largely used as an article of diet, as it is in Lancashire.

6. That the keeping of butter in a sound state appears to depend on its being obtained as free from uncombined albumen, or caseine, and water, as it can be, by means of washing and working the butter when taken from the churn.

II.—REMARKS ON CHURNING BUTTER.

BY MR. JOHN BALLANTINE, EDINBURGH.

THE writer of this Essay has been an extensive dealer in Scotch butter for thirty years, and he is of opinion, that with the exception of sweet butter made in the neighbourhood of Edinburgh and Glasgow, there has been rather a deterioration than an improvement in the quality of Scotch butter during that period. There has been, however, a very decided improvement in the quality of the butter made of late years by the farmers in the places above mentioned, which is chiefly attributable to the method now adopted, of making the butter from the *entire milk*, by which the dairy farmer is enabled to carry on his operations in a regular and systematic manner, to churn the milk at exactly the proper period, to regulate the temperature, and, in short, to conduct the whole process on certain principles.

Experience has fully proved that butter is yielded in the largest quantity and of the best quality by the *entire milk*, that is, the milk from which the cream has not been separated. It is equally certain that the milk must likewise be kept till it has acquired a certain degree of acidity, in which state also it affords the best buttermilk—a point of very great importance in a district where it meets with a ready sale.

Being connected with a dairy farm of about thirty cows, situated twenty miles south of Edinburgh, the writer proceeds to give an account of the system successfully followed out at that farm.

In the summer season, the milk of the thirty cows is placed at the morning milking, in two zinc coolers of sufficient capacity, and allowed to remain there to cool till the evening. It is then drawn off by cranes or siphon into vats sufficiently large, not only to contain this quantity, but also the evening's *meal* or milking, which is mixed with it; and these vats are then put by, to stand totally undisturbed, till the whole acquires a sufficient degree of acidity. The time required for this purpose varies a little, according to the heat of the weather and the temperature of the milk-house. The point is ascertained by the formation of a strong thick *brat* or scum on the surface, which then becomes uneven. The two succeeding milkings are treated in the same way, kept, of course, in separate vats, and, after standing for at least two entire days, the whole is put into the churns. By this method the dairy churns three days in the week. Some of the milk is thus a little longer kept than other portions, but this does not affect the quality of the whole. The milk of Sunday and Monday is churned on the Thursday morning; that of Tuesday, Wednesday, and Thursday morning, on the Saturday and Thursday evenings; and that of Friday and Saturday, on Monday morning.

The churn used at this dairy is the *plunge*, or *upright* churn, which is reckoned superior to either the barrel or box-shape. Two churas are employed, driven by a walking

beam with two arms, attached to the water wheel of the thrashing machine, and they work at the rate of thirty-eight or forty strokes in the minute. Should there not be milk enough for both churns, one can be used, and, by shortening the stroke of the churn-staff, it can be adapted to any quantity of milk, from 20 Scotch pints to 100; thus affording ample facility of churning at any intermediate time, when necessary. The milk being then carried in the vats from the milk-house to the churning-house, and put into the churns, as much hot water is added to it as brings the whole to the temperature of 65° . The churns are then set agoing, at the rate of thirty-eight or forty strokes in the minute, and this rate is continued till the *butter comes*, which requires from three to three and a half hours. The velocity of the wheel is then diminished by letting off part of the water, and the churns made to go very slowly, in order to gather the butter. When this is accomplished, the dairymaid gathers the butter from the churn with her hands, well washed and rinsed in cold spring-water, and carefully squeezes the milk out of it: it is then put into a vessel filled with fresh spring-water, well washed, and made up into half-pound rolls for the market.

In the winter season, when the cows are fed upon turnips, the system is changed—the coolers are dispensed with, and the morning's milk is carried from the byre and put into the churn, closely covered up. The same is done with the evening's milk, and, next morning, hot water is added to bring the whole to the temperature of 65° , and the churns set agoing. By this method, both the butter and the buttermilk are wholly free from any taste of turnips. The souring of the milk may be hastened by adding a little that is already sour. When butter is made from cream, the temperature required is only 55° , and the time occupied in churning does not exceed an hour and a half. Each meal of milk is put into coolers, not more than four inches deep, and allowed to stand for twenty-four hours. The milk is then drawn off by a siphon, and the cream, which is left on the bottom, gathered and put into a proper vessel; each gathering of cream is kept separate until it acquires sufficient acidity, when the whole is put into the churn and churned. In the winter season, hot water is added to bring the cream to 55° of temperature. Butter may be made from sweet cream, but it is neither good in quality nor large in quantity, and longer time is required in churning. It is an unprofitable method. On the whole, the writer is now fully persuaded, from an experience of thirty years, that the most profitable way of managing a dairy is that of churning from the entire milk in the way described. It possesses the great advantage of being adapted to any degree of temperature which usually occurs in this country, whereas it is often very difficult to operate with *cream*, which will not answer with a heat above 55° . One hundred gallons of entire milk will yield, in the summer months, five per cent. of butter more than the cream will produce, taken from the same quantity of milk. It is hardly necessary to add that the greatest care must be taken to keep all the vessels in the cleanest state. The method of salting the butter is of the greatest importance; very slight errors in this respect cannot fail to deteriorate the butter and greatly reduce its price in the market. As already observed, the butter made from *entire* milk, brought to a certain degree of acidity, is not only the best in a fresh state, but is best calculated for long keeping in a sound state when salted. The method of salting, as practised at this dairy, is as follows:—

The butter is drawn warm from the churn; and it is an invariable rule *never to wash it or dip it into water*, when intended to be salted. The dairymaid puts it into a clean tub, which is previously well rinsed with cold water, and there works it, with cool hands, till all the milk is thoroughly squeezed out. Half the allowed quantity of salt is then added, and well mixed up with the butter, and in this state it is allowed to stand till next morning, when it is again wrought up, any brine squeezed out, and the remainder of the salt added. It is then packed into kits, which, when full, should be well covered up, and placed in a cool dry store—a small quantity of salt is usually sprinkled on the surface. The proportion of salt used at this dairy is half a pound to fourteen pounds of butter, *avoirduois*.* There are two great errors in the curing of butter in Scotland, which have caused its price to be lower than that of foreign cured butter, namely, using butter made from cream, which is often too long kept, and not salting it *immediately* from the churn. Much of the butter cured in Scotland is delivered in a fresh

* Dr. Traill observes that the proportion of salt which he recommends is half a pound to sixteen pounds of butter, being rather less than the proportion recommended in this paper. Perhaps the difference may be explained by the quality of the salt, which, in Liverpool, is dry and fine. Salt for curing either butter or fish, should be purified from all admixture of potass or magnesia, and be perfectly dry. For butter, a fine-grained salt is preferred; for fish, a hard coarse-grained salt is the best. Mr. Ballantine states that he considers some part of the first salt is washed out in the shape of brine in working up for the second salting.

state by the farmer, and salted afterwards by the curer. Until the farmers shall learn to cure their own butter, the price of Scotch butter in the market will never equal that of foreign. This remark applies chiefly to the northern counties, the salt butter of which is selling at 84s., while foreign butter is bringing 100s. per cwt. in the London market. The writer of this paper sold upwards of five tons of butter, churned and cured as has been described, in the course of last year, at the rate of one penny or two pence per pound higher than that of any foreign butter in the markets here. The Clydesdale and west country butter is almost all consumed in the manufacturing districts, very little of it finding its way even to Edinburgh; and the butter made in this and contiguous districts being consumed here, little or none finds its way to the London market, otherwise there is no doubt but that it would be found fully equal to any foreign butter sold there.

If the Scotch farmers who supply the London market wish to obtain the top price, they must churn their butter from the entire milk, and cure it fresh from the churn in their own dairies.

It must be admitted, however, that, in situations where there is not a sale for butter-milk, this mode of churning will scarcely be so profitable as that from the cream, when, though the butter may not command the highest price, compensation will be made to the farmer by the cheese which may be made from the skimmed milk.

If any method could be discovered of making *cheese* from buttermilk, it would be of immense importance to all dairy farmers. This is a subject highly deserving of the attention of the Highland and Agricultural Society.

The two following tables may be taken as showing the aggregate results of many experiments in churning milk and cream:—

No. 1.—FROM ENTIRE MILK.

Season.	Temperature of the Churn when set.	Time in Churning.		Heat of the Churning-house.	Heat of the churn when Butter came.
		Hours.	Min.		
June, 1842.	65 Degrees.	3	30	60 Degrees.	68 Degrees.

No. 2.—FROM CREAM ONLY.

Season.	Temperature of the Churn when set.	Time in Churning.		Heat of the Churning-house.	Heat of the churn when Butter came.
		Hour.	Min.		
October, 1842.	55 Degrees.	1	30	54 Degrees.	59 Degrees.

CONCLUSION ON MEAT-MAKING.—That box-fed or shed-fed animals of good breed, fed on purchased food properly prepared, in addition to the utmost produce of the best grown crops which a thorough fertile farm can yield, will turn out more meat per acre than is possible by any other animals under any other circumstances. That land must be raised to the highest fertility which the cost of drainage or burning, or marling or liming, of manuring and cultivation permits—that it must then be made to yield alternately with grain crops, the best descriptions of Swedish and other Turnips, of Mangold Wurzel, of Carrots, of Clover, Vetches, Rape, or other green crops, which skilful cultivation can produce, and the best crops of each that cost and climate allow; that, with this produce, Linseed and, say, Beans, must be bought (or grown) for consumption in the proportion of 1 of the former, and about 3 of the latter, with every 100 of the green food; that this, properly prepared, must be given to good individuals of the short-horn, Hereford or Devon breeds of cattle, kept in clean, well-littered boxes, or to good individuals of the Leicester, South-down, long-woolled, or cross-bred breeds of sheep, in well-littered and well-sheltered sheds, before a maximum of meat can be expected.—*English Agricultural Society's Journal*.

SHOULDER LAMENESS.—If the lameness is really in the shoulder, bleeding in the arm and blistering the shoulder will be the best remedy, followed by sufficient rest. If, however, the pony puts his foot forwards in the stable, and does not rest upon it, the lameness is not in the shoulder, but the foot.—

W. C. S.



ON REARING TURKEYS.

FROM Dixon's work on poultry we make the following extract. If not for old, it may contain hints for young housekeepers. It brings to mind much that we ourselves remember to have noticed in the habits of this valuable bird, and justly ridicules some foolish notions and habits in the treatment of turkeys, young and old. Let no one affect to despise information on such subjects, or, let those who are too proud to learn, refuse also to eat:—

“When the hen has once selected a spot for her nest, she will continue to lay there until the time of incubation, so that the eggs may be brought home from day to day, there being no need of a nest egg, as with the common fowl. She will lay from fifteen to twenty eggs, more or less. If there are any dead leaves or dry grass at hand, she will cover her eggs with these; but if not, she will take no trouble to collect them from a distance. Her determination to sit will be known by her constantly remaining on the nest, though empty; and as it is seldom in a position sufficiently secure against the weather or pilferers, a nest should be prepared for her by placing some straw, with her eggs, on the floor of a convenient out-house. She should then be brought home and gently and kindly placed upon it. It is a most pleasing sight to witness the satisfaction with which the bird takes to her long-lost eggs, turning them about, placing them with her bill in the most suitable positions, packing the straw tightly around and under them, and finally sinking upon them with the quiet joy of anticipated maternity. In the south of England from fifteen to twenty eggs may be allowed; but with the Norfolk variety, which is the smallest and in a northern or eastern country, it is found that moderation succeeds better than over-greediness of chicks. In this case thirteen eggs are enough to give her; a large hen might cover more; but few strong, well-hatched chicks are better than a large brood of weaklings that have been delayed in the shell, perhaps twelve hours over the time, from insufficient warmth. At the end of a week it is usual to add two or three fowls' eggs, ‘to teach the young turkeys to peck.’ The plan is not a bad one; the activity of the chickens does stir up some emulation in their larger brethren; the eggs

take up but little room in the nest; and at the end of the summer you have two or three very fine fowls, all the plumper for the extra diet they have shared with the little turkeys. Some ladies believe it necessary to turn the eggs once a day; but the hen does that herself many times a day. If the eggs are marked, and you notice their position when she leaves the nest, you will never find them arranged in the same order. A person who obtained 99 chickens from 100 eggs, took the trouble to turn every egg every day with her own hand, during the whole time of incubation. The result *appears* favourable; but, in fact, only amounts to this, that such officiousness did no harm with such a good, patient, quiet creature as the sitting turkey is, but it would probably have worried and annoyed any other bird into addling her whole clutch. We will at once reject, as utterly absurd and unnatural, all directions to immerse or 'try' the eggs in a pail of water, hot or cold. In four weeks the little birds will be hatched; and then, how are they to be reared? Some books tell you to plunge them in cold water, to strengthen them: those that survive will certainly be hardy birds. Sir J. S. Sebright exposes the folly of endeavouring to make young creatures robust by undue exposure to cold and hardship, an experiment which some men and women are cruel enough to try upon their own offspring. Air and exercise increases the strength of any growing animal, but cold and hunger only dwarf and weaken. We see robust children in extremely poor families, not because they are poor, but because, if they were not robust, they would not be alive at all. Sir John, in his 'Treatise on improving the Breeds of Domestic Animals,' pp. 15, 16, says: 'In cold and barren countries no animals can live to the age of maturity but those that have strong constitutions; the weak and the unhealthy do not live to propagate their infirmities, as is too often the case with our domestic animals. To this I attribute the peculiar hardiness of the horses, cattle, and sheep, bred in mountainous countries, more than to their having been inured to the severity of the climate; for our domestic animals do not become more hardy by being exposed, when young, to cold and hunger; animals so treated will not, when arrived at the age of maturity, endure so much hardship as those who have been better kept during their infant state.' Others say, 'Make them swallow a whole pepper-corn;' which is as if we were to cram a London pippin down the throat of a new-born babe. Others, again, say, 'Give them a little ale, beer, or wine.' We know, unhappily, that some mothers are wicked enough to give their infants gin, and we know the consequences. Not a few advise that they be taken away, and kept in a basket by the fire-side, wrapped in flannel, for eight or ten hours. Why take them away from her? She has undergone no loss, or pain, or labour: she wants no rest, having had too much of that already. All she requires is the permission to indulge undisturbed the natural exercise of her own affectionate instinct. Give them nothing; do nothing to them; let them be in the nest under the shelter of their mother's wings at least eight or ten hours; if hatched in the afternoon, till the following morning. Then place her on the grass, in the sun, under a roomy coop. If the weather be fine, she may be stationed where you choose, by a long piece of flannel list tied round one leg, and fastened to a stump or a stone. But the boarded coop saves her ever-watchful anxiety from the dread of enemies above and behind—the carrion-crow, the hawk, the rat, the weasel; and also protects herself (she will protect her young) from the sudden showers of summer. Offer at first a few crumbs of bread: the little ones for some hours will be in no hurry to eat; but when they do begin supply them constantly and abundantly with chopped eggs, shreds of meat and fat, curd, boiled rice mixed with cress, lettuce, and the green of onions. Melted mutton-suet poured over barley-meal, and cut up when cold; also bullock's liver boiled and minced, are excellent things.

Barley-meal, mixed thick and stiff with water or milk, nettle-tops, leeks, goose-grass, or cleavers, and many other things might be added to the list; but it is probable that a few of these may now and then be refused by some fanciful little rogues. I think I have observed that little turkeys do not like their food to be minced much smaller than they can swallow it; indolently preferring to make a meal at three or four mouthfuls to troubling themselves with the incessant pecking and scratching in which chickens so much delight. But at any rate, the quantity consumed costs nothing; the attention to supply it is everything."

Influence of Light on Plants, showing the necessity for early sowing of spring corn.—The influence of light on vegetation, and the mischief to young plants from too great exposure to its stimulating powers in their infant growth, is very clearly and beautifully presented to our observation, in the growth of Hyacinths, as seen in glasses, under different circumstances. Gardeners have found that to get strong self-supporting stems, and fine healthy flowers, it is necessary when the bulbs are first brought in contact with water, that they should be placed in the dark for three or four weeks. Whilst treated in this way, they make little shoot upwards—they are engaged in pushing strong roots down into the water. But great is the difference in those that are too early brought into the light; their progress upwards is much more rapid, but their stems will be weak and their flowers ill developed, and tumbling about from the inability of the drawn-out stalks to uphold them; and the whole plant shows the ill consequences of too excited a vegetation, and the want of support at the roots. In farming, I have had frequently to remark the same difference of growth, and the same debility of stem in the late sown corn, as compared with the earlier. The cuckoo sown Barley, deposited when the duration of daylight much exceeds the night, is known by its weak straw, and liability to be laid, and the inferiority of its grain. Late sown Oats are comparatively but as tailings to earlier sown, and Beans and Peas are still greater sufferers from too late sowing. In a word, the growth above ground of late sown corn, from the longer exposure to the stimulating effects of daylight, is too much for the lesser growth of the roots underneath. Farmers often suppose, because there is comparatively little difference in the time of appearance above ground, between January and April sowings, and the two harvest nearly together, that there must be but little progress making in the seed during the period it is not visible. But this is not so, as any one may see, by taking up seed sown in the depth of winter, a month or so after it has been deposited. I believe the earth in England is never so cold as to wholly prevent roots from making some progress. For I have noticed grain that has been sown immediately preceding a long and hard frost, on the frost breaking, to have put forth its radicles whilst it was bound up in ice; and so it is with trees, and hence the necessity for autumn transplanting of many shrubs which will not bear late moving. Now if roots were idle in the winter, where would be the difference in transplanting between October and February. To the advantage from winter sowing of Barley, now so much practised in Essex, Suffolk, and the eastern counties, I have before referred. On this subject the farmers of the south and west of England have much yet to learn. They frequently lose quarters an acre in their returns from not sowing sufficiently early.—*Hewitt Davis, 3, Frederick's place, Old Jewry, London, February 16.*

VINE BORDERS.—It is a very bad practice to turf them. If you must have something on them, then sow them with the more slender growing annuals, as Mignonette, &c., or plant them with verbenas; but they should never be cropped, if it can be avoided.

A NEW AND USEFUL MACHINE SUGGESTED FOR THE ATTENTION OF AGRICULTURAL IMPLEMENT MAKERS.

To the Editor of "The Plough, the Loom, and the Anvil."

Cleveland, 9th March, 1850.

J. S. SKINNER, ESQ.,—I have long had in contemplation a plan of a machine for excavating drains, but have never been able to make a trial, and don't think soon will—though draining in this country will never be extensively practised, unless we devise cheaper methods of performing the labour than has yet to my knowledge been discovered; and we have a great deal of land that is not worth much without. Oh! if we had applied to this and kindred subjects but a tithe of what is uselessly, yea, perniciously squandered by the government, agriculture would take such a start as has never been dreamt of. My plan of an excavating machine for drains would be something like a portable horse-power for threshing, having a horizontal cast iron fly-wheel, of some greater diameter than twice the depth of the drain, of the width and taper of the same, shod with diggers or cutters, and made to revolve at least fifteen hundred times in a minute, and to extend below the bottom frame as far as the depth of the drain to be cut. I think it would be best to make it cut in an upward direction, and there could easily be a fixture in front to make the dirt fall on one or both sides of the drain, leaving the drain perfectly clear behind. The forward motion could be given in many ways. I think friction wheels would be the best. The speed, I mean in a forward direction, could be regulated by a lever to suit the different degrees of hardness in the soil. This machine could be made to form the drain to suit any of the methods spoken of by Stephens in his "Book of the Farm," and if properly constructed, would cut through the hardest stone to advantage, if not too abundant.

If you have any faith in the above, please give my ideas to some of your wealthy and ingenious agricultural friends for consideration. And if the plan should be thought practicable, I will be pleased to answer any inquiries in regard to the minutiae

Yours, respectfully,

JOSEPH DYSART.

✎ We have very strong faith in it, and hope some enterprising manufacturer will take up the idea and see what can be made of it. We once had some hope that Messrs. Norris & Brothers, the great steam-car engine manufacturers, would turn their attention to the practicability of some cheap portable steam engine for ditching. It is a great desideratum in our country, to find some cheap mode of cutting ditches and drains. Millions of acres of the very best land might be brought under cultivation, were it not for the expense of doing it by mere human muscular power. Mr. Dysart has liberally thrown his ideas before the public, and we hope they may be turned to account for the public good. If manufacturers needed only such an invention for results equally important to them, how surely they would accomplish it!—*Ed. P. L. & A.*

WHEAT DEGENERATING TO CHESS OR CHEAT.

I WAS astonished to see at this late day, the doctrine advanced that chess or cheat would not reproduce itself, and that it always is the product of degenerated wheat. In the Patent Office Report of 1848, p. 471, it is affirmed, that a peck of clean chess or cheat was seeded to test the principle, and that not one grain thereof vegetated, and hence the bold conclusion is arrived at, as above indicated. I should like to know how many pecks of wheat have been seeded, that have never vegetated, also how many of corn that have never seen the light. The hopes of the farmer are often blasted from defective

seed, and it is an unquestionable fact, that too little attention is paid to this important matter, and great loss is the inevitable result. It would scarcely seem necessary to controvert this strange doctrine in regard to the degeneracy of wheat, but such is the extensive circulation of the reports, and the consequence attached to them, that some notice should be taken of such a statement, to shield young and inexperienced farmers from committing so great a mistake.

An experience of some forty years has satisfied me, that this pest is as certain to vegetate as wheat or any other variety of small grain, and I opine that if such a doctrine as the above was advanced in this section of country, the author would be literally laughed at, and if he persisted in it, would be set down as certainly demented. There are some truly who still think that wheat will degenerate to darnel—for that is the name by which it is known in these diggings—but that darnel would reproduce darnel has never before been questioned. Some fifty years ago an old plain farmer, a firm believer in the degeneracy so called, affirmed that he could bring darnel back again to wheat, by attentive and judicious cultivation, and went to work to accomplish his object; accordingly, a fine rich square in his garden was duly prepared, and the seed carefully deposited—it *vegetated finally* and a great crop was produced, the grain considerably improved both in size and appearance; this gave him confidence, and he declared that in a few years, by sowing his improved darnel, the wheat would be there. He continued to sow, and to hand hoe:—well, such darnel was never seen in any country, so tall, luxuriant, grain of enlarged size; but it was darnel still, and no mistake. He continued the experiment for some years; and after certainly improving the quality of his darnel—for it was conceded on all hands that it was the largest ever seen—he gave it up in despair, and abandoned his notions about the degeneracy of wheat, as, in my humble opinion, all thinking men ought to do. It is against the order of nature, for she moves by certain fixed laws, about which there is no shadow of change.

The undersigned has been a quiet cultivator of the earth for some forty years, and when he commenced operations, his farm was filled with cockle and darnel; hundreds of bushels were for many years blown out by the fan and passed through the screen-board: the utmost pains were taken to get clear of these pests, and although vastly diminished, they were still to be found in the wheat, and affecting, to some extent, the sample for sale. Even in the famed year of 1816, when wheat was certainly more perfect and beautiful than ever seen before or since, the darnel was present: in that year degeneracy was impossible, for there was not even a particle of rust on the wheat. Three years ago this pest disappeared, nor have I seen it since in any fields, and so also the cockle. But how has this thing been accomplished? I will tell you—I had seen advertised by Sinclair & Co. an implement called the cylindrical screen, which would separate all filth from wheat; and so it will, save garlic of equal size with wheat. By purchasing one of these implements and passing all my seed-wheat through it, my crops are now perfectly clean; in fact, I have ceased to use it, and would cheerfully dispose of the article at a reduced price, for as I sow no filth I reap none, and the implement is now useless to me. Perhaps the reader may imagine that the statement above made respecting the attempt to convert, or bring back darnel again to wheat, is a mere figment; but let me declare with honest sincerity and truth, that the statement may be relied on. Many things have been published to stagger belief on this heretofore much vexed question—indeed, before I had taken the pains to investigate the subject, I was inclined to the opinion myself; but all doubt has long since vanished from my mind. I could state other facts, but deem it useless; it would be occupying space in your columns which may be far better employed.

AN OLD FARMER.

Directions as to the Quantities of Guano and Ground Bones necessary for any given space of ground.—As guano and crushed bones are getting more and more into use, and will no doubt become permanent applications, from the experience that has already tested their high utility, the following tables have been carefully constructed for the purpose of preventing possible waste, and assisting ploughmen and others who have little time for minute calculation. As regards the manures named, the tables annexed are intended as a sort of ready reckoner, which, by simply leaving out fractional parts, show at a glance how much of each will be required by the yard, drill, rood, or acre, no matter how extensive the fields cleaned and dunged for green crops.—*Taken from an English paper.*

TABLE, showing the quantity of Guano required to be sown in a certain number of yards, equal to 1 cwt. to the acre, in drills from 36 to 22 inches apart.

IMPERIAL STANDARD MEASURE.

Distances of Drills in inches apart.	No. of the Lineal Yards in the Imperial Acre.	Length of yards for lbs. equal to 1 cwt. of Guano.
36	4840	43
35	4978	44
34	5124	45
33	5280	47
32	5445	48
31	5620	50
30	5808	51
29	6008	53
28	6222	55
27	6453	57
26	6701	59
25	6969	62
24	7260	64
23	7575	67
22	7920	70

EXAMPLE.—Suppose the drills to be 36 inches apart—1 lb. of guano to 43 yards is equal to 1 cwt. per acre; 2 lbs. to 43 yards is equal to 2 cwt. per acre, and so on; every pound for 43 yards being equal to 1 cwt. per acre.

TABLES, showing the Distance a Bushel of Bones will reach in Lineal Yards, from 10 to 25 bushels per acre, in drills from 36 to 22 inches apart, in Imperial Measure.

Distance of Drills in inches apart.	No. of the Lineal Yards in the Imperial Acre.	QUANTITIES PER IMPERIAL ACRE.																
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
36	4840	484	440	403	372	345	320	302	284	268	254	242	230	220	210	201	193	
35	4978	497	452	414	382	355	331	311	292	276	262	248	237	226	216	207	199	
34	5124	512	465	427	394	366	341	320	301	284	269	256	244	232	222	213	204	
33	5280	528	480	440	407	377	352	330	310	293	277	264	251	240	229	220	211	
32	5445	544	495	453	418	388	363	340	326	302	286	272	259	247	236	226	217	
31	5620	562	510	468	432	401	374	351	336	312	295	281	267	255	244	234	224	
30	5808	580	528	484	446	416	387	363	347	322	305	290	276	264	252	242	232	
29	6008	600	546	500	462	422	400	375	353	333	316	300	286	273	261	250	240	
28	6222	622	565	518	478	444	414	388	371	345	327	311	296	282	270	259	248	
27	6453	645	586	537	496	460	430	403	379	358	339	322	307	293	280	268	258	
26	6701	670	609	558	515	478	446	418	394	372	352	335	319	304	291	279	268	
25	6969	696	633	580	536	497	464	435	409	387	366	348	331	316	303	290	278	
24	7260	726	660	605	558	518	484	453	427	403	382	363	345	330	315	302	290	
23	7575	757	685	631	582	541	505	473	445	420	398	378	360	344	329	315	303	
22	7920	792	720	660	609	562	528	495	465	440	416	396	377	360	344	330	316	

I have often thought of sending you the annexed tables, which were prepared for me soon after I first began to use guano, and which I and numerous friends to whom I gave a copy have found most useful. I doubt not that many of your agricultural readers would be thankful for the information they contain.

HONOUR TO WHOM HONOUR IS DUE.

WILL some one send the names of the legislators in Maryland, to whom was referred the very strong memorial, published in the "*American Farmer*," for February, praying legislative enactments to abate the scandalous grievance so long endured by the farmers of that state, from *pestilent sheep-killing dogs*?

The loss sustained, in being thus restrained from the enjoyment of abundant means for increasing their flocks of sheep, was demonstrated, in that memorial, to be little, if any, under half a million of dollars—enough, or nearly so, to pay the interest on the state debt, heavy as that is. Now, it is but fair that the working members, who may have yet more clearly illustrated this crying evil by their report, and secured the abatement of it, by appropriate and wise legislation, should have *their names distinguished*, at least in the agricultural annals of the state; for, although, be it admitted, prompt and efficient attention was but an obvious duty, in such a case, so presented—no more than it is customary for all parties to *promise*, when soliciting the suffrages of the *dear* people; still, the promises made *before*, are so often disregarded *after* men are elected, that, as to those who do act faithfully up to them, it is well, as a matter of public policy, if not of public justice, to hold up their names conspicuously, and challenge for them the public esteem!

As this well drawn memorial was prepared at the instance of the "*Maryland State Agricultural Society*," it will, doubtless, at its meeting, on the 1st May, at Baltimore, call for a *report from its committee*, to the end that the society may pass a vote of thanks to the legislative committee, or otherwise take such measures in the premises as will insure respect for its own patriotic suggestions, and ample justice to those in authority, *according to their merits*, and of *whatever party they may be*. Were it possible for the society to fail in doing so, which we will not believe, the people might begin to inquire—for what use has a society been incorporated under the name of the "*State Agricultural Society*?"

For "The Plough, Loom, and Anvil."

CALENDAR OF OPERATIONS.

SPRING appears now in all its beauty after a very cold, wet, and changeable opening—the thermometer frequently indicating 7° (Fahr.) of frost, and ice making three-quarters of an inch thick in the shade, which, however, has done no damage to our fruits in this vicinity, though they may have suffered in more southern latitudes. The vegetable garden has made no progress. Radishes and peas are up. Cabbage and lettuce begin to grow. All our early crops are sown. Sow peas, spinage, Indian lettuce, and yellow and white summer radish for a succession. Plant snap-shorts, or Valentine beans; if any were above ground, and have been cut off with the frost, do not fret over them, but plant again. The Mohawk bean is the hardiest, the speckled Valentine the best, and continues longest in use. A small planting should be made every two weeks till August. Prepare ground and poles for Lima beans; make the hills about four feet apart, or, if only a single row is planted, three feet will be enough; give a good shovelful of manure to each hill; place thereon poles seven feet high, and plant four to six beans on each hill with the eye downward; they do not succeed in wet ground. A vegetable garden is extremely deficient without its patch of Lima or butter bean; it is indispensable in its season, and may be used throughout the year by every housekeeper. Sow beets (salsay, or vegetable oyster), parsnips, late cabbage, and carrots, for a full winter supply; if ground is scarce, early horn carrots, early blood and turnip beets may be sown on ground from where early peas and radishes have been taken as late as the end of June. Prepare ground for tomatoes, which, by the by, is a crop which requires no manure, except on poor sandy soil. There are several varieties of this favourite vegetable. The yellow and pear-shaped have fewer seeds than the large red, and, by many, are preferred on this account; except in flavour, we can perceive very little difference; the large smooth red tomato is most generally

cultivated. We desire also to call attention to the radish beet—a very long dark blood beet, which, if sown any time in May, makes a winter beet of the very best quality, being dark in colour and tender in flesh; if sown early to keep over winter, it is hard and thready; indeed, any winter beet will get hard if sown early in spring. Put in a full crop of cucumbers and bush squash. Nurse up your egg-plants and peppers till the cold nights are fairly over.

Sow a full crop of water-melons and cantelopes as soon as the ground is warm. They delight in light sandy soil; place two shovelfuls of short manure in each hill; if the bug offers to depredate on the crop, sprinkle the leaves early in the morning with plaster, air-slaked lime, or wood ashes. The best water-melon is the mountain sprout, or mountain sweet. These have the preference in our market, and are superior to the Carolina or Spanish.

Sow endive for a full crop, and prepare ground for early celery; it does well between the rows of late peas; do not overlook a succession of extra early, and sugar corn in rows one foot from plant to plant, and two and a half feet from row to row. Where fruit-trees have been planted and not fully cut in, do so at once; do not be sparing of the knife; prune back to one or two eyes from the wood of the preceding year. The trees will form finer heads, and be much more certain of growth. Make your strawberry-beds with care and without delay; dig or plough deep; if you trench or sub-soil, so much the better, though we are not so sanguine on this point as we are in using plenty of stable manure—poudret or guano, of the latter at the rate of four cwt. to the acre. Our bed is two hundred feet long, and twenty wide, and we see none to beat it. There are sixteen sorts of strawberries, one-half are not worth their room, and will only keep it one season longer. We gave a list last month of our favourites. (For *Bean Pine* read *Burr Pine*.)

November is the best month for planting in the Southern States. For market, we believe there is no crop equal to this favourite fruit for a profitable return.

☞ Good gardening consists of digging deep and manuring well, cultivating freely and destroying every weed. It is no garden that is full of weeds, and a poor garden that is not full of crop. Every variety of annual seeds should be sown without delay; thin them out when up; their beauties will be more fully developed by an occasional watering with guano, *at the rate* of one pound to five gallons of water; its fertilizing properties are astonishing, and the Peruvian is one-third stronger than the Patagonian.

ON THE CULTIVATION OF MANGOLD-WURZEL.

BY WILLIAM MILES, M. P.

To Ph. Pusey, Esq., M. P.

DEAR PUSEY:—Notwithstanding the favourable result of Lord Spencer's experiment with mangold-wurzel, the consideration will naturally suggest itself to the mind of the farmer, previously to his adopting the cultivation of this root, whether, although the mangold-wurzel may bring on his cattle faster and better than the Swede turnip, it is not more difficult of culture, more tender in its habits, and less productive in bulk per acre than the Swedish turnip; and I think, therefore, it may not be unprofitable to lay before the readers of the Journal first, the chemical analysis of the highest and lowest order of turnip and of mangold-wurzel, as given by Sir H. Davy, and of the sugar-beet and orange-globe mangold-wurzel, as lately obtained on the same plan by the celebrated Bristol chemist, Mr. Herapath; and then to point out

the system adopted by myself in the West of England in the cultivation of mangold-wurzel, which has been attended with complete success.

Roots. Species.	QUANTITY OF NUTRITIVE MATTER IN ONE THOUSAND PARTS.				
	Mucilage or Starch.	Saccharine Matter or Sugar.	Gluten or Albumen.	Extract.	Total Soluble or Nutritive Matter.
Swedish turnip	9	51	2	2	64
White turnip	7	34	1	—	42
Mangold-wurzel	13	119	4	—	136
Orange-globe	25 $\frac{3}{4}$	106 $\frac{3}{4}$	1 $\frac{1}{2}$	less than 1	135 $\frac{1}{2}$
Sugar-beet	17 $\frac{3}{4}$	126 $\frac{3}{4}$	1 $\frac{1}{2}$	1	146 $\frac{3}{4}$

By this table it is apparent that equal quantities of Swede turnip and orange-globe mangold-wurzel contain very different proportions of nutritive matter, the latter more than doubling the former in quantity; and should the mangold-wurzel be of equally easy culture with the Swedish turnip, it seems almost unaccountable that it should not yet have come into more general cultivation. I have grown the common red sort for six, the sugar-beet for four, and the orange-globe for three years; these kinds have regularly come into course with Swedes upon light land; the product has always been equal, in most cases far heavier. The Swede turnip has enemies innumerable; I have never observed the mangold-wurzel attacked either by fly, slug, or wireworm. Equally a cleansing crop with the Swede, it stores better, and lasts good for a longer period. In the summer of this year I was using sugar-beet with stall-fed cattle, which cut perfectly good and crisp in August. The mode of culture I adopt up to depositing the seed in the ground is the same as that adopted in Northumberland for ridging the Swede; great care, however, must be taken that the seed of the mangold-wurzel is not buried too deep, or it will not vegetate. Dibbling, as you never can ensure an equal depth, does not answer; nor does the seed drill well, if properly prepared by steeping, which I should recommend, for at least twenty-four hours before planting. To ensure, therefore, a proper depth, I have been in the habit of using an iron wheel, round the outer circumference of which, eighteen inches apart, iron points project, broad at the base and tapering towards the point, about 2 $\frac{1}{2}$ inches long; this is wheeled upon the top of the ridge, the man walking in the furrow, and thus holes are formed which can never run into the excess of too great depth, and into which the seeds are deposited by women and boys following the wheel, and generally covering the seed by drawing the foot as they advance at right angles with the ridge over the holes; the roller follows, and thus the sowing terminates. One man with the wheel will keep six persons well employed in depositing the seed after him. This system was recommended me by my friend Mr. Webb Hall, and since I have adopted it my crop has never failed.

The after culture to the storing is similar to that of the Swede; great care, however, should be taken in never permitting two plants to grow in the same spot, which will be the case frequently, should only one capsule even be deposited in each hole, as every capsule contains many seeds. Should the tops remain uncut, the plant will stand a considerable degree of frost; it should, however, be stored early in November; the best and cheapest method is to build it up against some high wall contiguous to your beast-sheds, not more than seven or eight feet deep, carried up square to a certain height, and then tapering in a roof to the top of the wall; protect the sides with thatched hurdles, leaving an interval between the roots and the hurdles, which fill up with dry stubble, cover the roof with about a foot of the same, and then thatch it, so as to conduct all moisture well over the hurdles placed as a protection to the sides. In pulling the plants, care should be taken that as little injury be

inflicted upon them as possible; cleansing with a knife should on no account be permitted, and it is safer to leave some of the leaf on than, by cutting it too close, to impair the crown of the root. The drier the season is for storing the better, although I have never found the roots decayed in the heap by the earth, which in wet weather has been brought from the field, adhering to them. As to the productiveness of the different sorts, in one year I have grown a larger quantity of sugar-beet per acre, in another of mangold-wurzel; both these, however, I consider exhaust the land in a greater degree than the Swede; but I have formed a very high opinion of the orange-globe, though not so large a producer generally as the two other sorts; it appears always to throw at least two-thirds of its weight above ground; neither is its tap-root larger nor its fibrous roots greater than those of the Swede turnip. Care should be taken in giving cattle every species of this root, as, if taken in excess, it is apt to scour; indeed, from the avidity with which cattle eat the sugar-beet, and from its viscous properties when quite fresh from the ground, it should be stored so as to come into consumption the last of the roots.

In feeding store cattle, I should commence with Swede turnip, proceed with the orange-globe, then with mangold-wurzel, and finish off with the sugar-beet; thus not only frequently varying the food, but using them in the order corresponding exactly with the nutritive matter contained in each description of plant. I have found, indeed, equally with Lord Spencer, that it will not do to return from any sort of mangold-wurzel to Swede turnips, as even beasts in the straw-yard have for two or three days refused such a change. I may add that the earlier in April your mangold-wurzel is sown the better, the deeper the tilth the greater probability of a heavy crop; but that although both the mangold-wurzel and sugar-beet require a deeper and stronger land than the Swede turnip, yet that the orange-globe will flourish wherever the latter will succeed.

These are the details of the system I adopt as regards this root, and I shall be glad if I should prevail upon those who have not yet tried the culture of it to grow a small quantity, assured as I am that for certainty of crop and feeding properties the mangold-wurzel will not deceive expectation.

Yours truly,

W. MILES.

Kingsweston, Nov. 1, 1841.

WHAT CAN BE DONE ON ONE ACRE OF GROUND.—The Editor of the *Maine Cultivator* published, a few years ago, his management of one acre of ground, from which we gather the following results: One-third of an acre in corn usually produces thirty bushels of sound corn for grinding, besides some refuse. This quantity was sufficient for family use, and fattening one large or two small hogs. From the same ground he obtained two or three hundred pumpkins, and his family supply of beans. From a bed of six rods square, he usually obtained sixty bushels of onions; these he sold at \$1 per bushel, and the amount purchased his flour. Thus, from one-third of an acre and an onion bed, he obtained his breadstuffs. The rest of the ground was appropriated to all sorts of vegetables, for summer and winter use; potatoes, beets, parsnips, cabbage, green corn, peas, beans, cucumbers, melons, squashes, &c., with fifty or sixty bushels of beets and carrots for the winter food of a cow. Then he had also a flower garden, raspberries, currants, and gooseberries in great variety; and a few choice apple, pear, plum, cherry, peach, and quince trees.

Some readers may call the above a "Yankee trick." So it is, and our object in publishing it is to have it repeated all over Yankee land, and everywhere else. If a family can be supported from one acre of ground in Maine, the same can be done in every state and county in the Union.—*Ex.*

Table showing the average monthly wages of agricultural labourers; the average weekly wages of females engaged in domestic service; and the average daily wages of mechanics in the twenty States respectively mentioned: from the Patent Office Report of 1848.

	Agricultural, per month. Male.	Domestic, per week. Female.	Mechanics, per day.
Me.	\$12	\$1 to \$1 50	\$1 to \$1 50
N. H.	13	1 45	1 25
Vt.	12 50	1 08	1 25 to 1 50
Mass.	13 50	1 50	1 25 to 2 50
N. Y.	11 50	1 12½	1 25
N. J.	11 82	1	1 44
Penn.	9 66	1	50 to 1 50
Md.	10	1 25	87 to 1 00
Va.	9 44		1 25
Ga.	8 33	1	1 25
Ala.	10	1 50 to 2 00	
Miss.	10	2	
Tenn.	8	1	75 to 2 00
Ky.	15	1 87	1 to 1 80
Ohio	10 80	96	1 to 1 25
Ind.	10 95	98	1 32
Ill.	10 45	95	1 50
Mich.	11 30	1 25	1 50
Iowa	13	1 25	1 00
Texas	12		1 to 3

In the several slave States mentioned, we presume the prices given for female domestics are meant for coloured servants. In South Carolina, mechanics are said to receive \$200 per year. In Alabama, \$30 per month and found. In Mississippi \$35 to \$40.

From these data, we are of the opinion that the prices of agricultural labour in the United States average about \$10 62 per month, or say \$125 per annum and found; the wages of female domestics in free States average \$1 15 per week, or \$60 per annum and found; and the wages of mechanics, say \$1 25 per day, exclusive of board.

It will be understood that besides these wages, the hireling is found in bed and board, as good as any man in any circumstances need desire.

In England, the country with which we have chiefly to compete in manufactures, if we would diversify our labour, and work up our own materials of comfort and independence, the agricultural labourer gets \$1 50 to 1 75 per week; out of which he has to pay house-rent, fuel, clothes, provisions, schooling and all for his family. Now our policy would be not to depress our labour to the level of theirs, but by keeping up American labour, and with it the power of consumption of the farmer's products, draw immigrants in shoals to our country, and so raise the price of labour abroad—as would elevate them towards our standard instead of depressing our labour to theirs. It would prevent them from underselling us with their manufactures, and with more exemption from the policy of British merchants and manufacturers, every American interest would be benefitted.  *Our people are beginning to see this.*

It is altogether a gross error to suppose that the American farmer is to be benefitted by depressing to a low point the compensation to the agricultural labourer. A good and beneficent Creator never designed that any great interests should thrive on the poverty of the mass of the people. When that does happen—that the few fatten on the miseries of the many—we may be assured it is by one of those “inventions” of which Scripture tells us, man has found out so many.

LITERARY NOTICES.

MISS LESLIE'S NEW RECEIPT-BOOK, AND USEFUL GUIDE FOR LARGE OR SMALL FAMILIES.—At the head of the list of judicious and good people, who despise all humbuggery, we would place the authoress of this work; whereof, the copy before us, published by A. Hart, late Carey & Hart, is the third edition, enlarged.

As it may not yet for some time reach its ultimate destiny, in the housekeeper's room of every well-managed family, we give a little table, which conveys the practical information to show that the common saying that "a pint is a pound," is a common story teller.

Weight and Measure.

Wheat flour,	one pound of 16 ounces	is one quart.
Indian meal,	one pound two ounces	is one quart.
Butter, when soft,	one pound one ounce	is one quart.
Loaf sugar, broken up,	one pound	is one quart.
White sugar, powdered,	one pound one ounce	is one quart.
Best brown sugar,	one pound two ounces	is one quart.
Eggs,	ten eggs weigh	one pound.

LEAVES FROM THE NOTE BOOK OF A LOUISIANA SWAMP DOCTOR: By Madison Tensas, M. D., Ex. V. P. M. S. U., Ky, Author of "Cupping on the Sternum." With original designs by Darley. Philadelphia: A. Hart, late Carey & Hart.

The readers of the *Spirit of the Times*, whose name is legion, will have seen enough of amusing anecdotes from this work to make them wish for "more of the same sort." Why, the very thought of the scenes which must pass in review before a "Louisiana Swamp Doctor," is enough to provoke the curiosity of a stoic or Indian.

DE BOW'S NEW ORLEANS COMMERCIAL REVIEW OF THE SOUTH-WEST for April is before us. Strong in its original appearance, this work has gone on accumulating force, and variety, until it has become indispensable to all who would understand and keep way with the vast progress in the growth of a country, whose wealth and power are increasing beyond all example in the history of human population and industry.

ENCYCLOPEDIA OF CHEMISTRY.—No science has made greater progress, enlarging the field of discovery, and applying its discoveries to useful ends—than chemistry. Of this work, just published by Henry C. Baird, Esq., successor to E. L. Carey, it ought to be enough to say that Professor Hare pronounced such a work to be much needed, anticipated the best results from "the well known ability of its authors;" and that in a review by Professor Silliman he says, "We have no hesitation in giving this work the most unqualified recommendation."

Without pretending to ability to judge of its merits *per se*, or by comparison, the testimony of such men would, with us, put the merits of the work beyond all question.

SYLLABUS OF CHEMISTRY—The same respectable and enterprising bookseller has published **SYLLABUS OF A COMPLETE COURSE OF LECTURES ON CHEMISTRY**, including its application to Arts, Agriculture, and Mining, by *Professor E. Solly*.

It is designed to occupy and we doubt not will well fill a vacant place in the library of chemical text books; being, as the American editor says, admirably adapted to the wants of both teacher and pupil. The public is under the greatest obligation to those who thus anticipate or supply its wants of scientific works, as we apprehend that they are less remunerative than many of which, it may be said, their morality is in an inverse ratio to their popularity.

THE PETREL.—Mr. Peterson, 98 Chestnut street, has presented in this story of love on the ocean, something at once fresh and refreshing. There is, in fact, something peculiarly wholesome in marine air, hence, for wild animals whose natural *habitat* is beyond its reach, nature provides "licks," and the herdsman salts his cattle. These tales of the sea have a peculiar zest for landlubbers as well as ladies, when they are well told, as is this of *The Petrel* by Admiral Fisher.

A TREATISE ON GRAPE CULTURE IN VINEYARDS has been received and read with particular interest. If we had not given an article of much value in our last, from the same pen, we should publish the essay contained in this pamphlet; but there is in it much besides from which to get materials for the gratification of our readers, when we can command the space. The difficulty is not to get matter, but to decide what shall be postponed when all is good.

THE READER, if inclined to find fault with the number of pages, in this number, given to the political economy of agriculture, will please take notice that the supplement on iron, is that much added to what we bargain for, and for which no charge is made.

SUPPLEMENT

TO

THE PLOUGH, THE LOOM, AND THE ANVIL.

ON THE IRON INTERESTS OF THE UNITED STATES—APPEAL TO CONGRESS.

THERE is not a cultivator of the soil, nor man whose welfare is connected with its products—nor is there a legislator or politician who is not concerned in the subjects discussed in the following papers. To the Farmer and Planter it is much more important to know, whether we should make our own or whether we should import our iron, than it is to be told, how to enrich an acre or to fatten a bullock. Insure him a market for corn and beef, and he will be sure to learn how to make his land produce both the one and the other. The great question for them, is the policy which will insure, in the long run, the most remunerating market. In every aspect it is one of the deepest interest. The very use or non-use of iron is the great characteristic mark of distinction between a state of civilization and a state of barbarism. In the progress of the arts this rude and impracticable material has been made more and more ductile, pliable, and subservient to the convenience and embellishment of society. The more extended use of it at once indicates and accelerates the progress of social refinement: the very iron pen before us, with which we are tracing these lines, demonstrates the mastery of science over matter. And to this mastery nothing has more contributed than iron itself. To all other elements of national power and aggrandizement for our country, Providence added bounteously *coal, lime, and iron*; but in the wise policy of some, we are told that we must forego the use of a material, above all others essential to national independence, unless we consent to depress the labour employed in its manufacture, to a condition of existence like that of the common labourer of European countries, which beggars all power of description, and sickens the heart to contemplate. Before freemen will submit to it, they would cultivate the earth with wooden ploughs, as of old, and become the rivals instead of the customers of the farmer. However, we will not anticipate the arguments contained in these papers, to the strength of which we could add nothing except by contrasting with them ours of so much less force.

After all it is mostly for the use of the Farmer and the Planter that iron is made; let them, therefore, read dispassionately, and judge for themselves whether it shall be made abroad by men who have little capacity to buy the products of the plough and the pasture, or at home by men who would have much capacity to consume the products of both.

MEMORIAL.

To the Senate and House of Representatives of the United States of America in Congress assembled:

YOUR Memorialists, interested in the manufacture of iron in the State of Pennsylvania, ask leave to offer some considerations and statements suggested by the suffering condition of that industry. We are not unaware of the prejudice which exists in the minds of many against the propriety of the government giving any attention to the grievances of manufacturers; neither are we ignorant of the grounds of this feeling.

It is a part of our purpose in this memorial to lessen, if we cannot wholly remove, this prejudice. On a subject of such importance, involving so many interests, in a country so extended as ours, it is to be expected that honest

differences of opinion will exist, and sectional, if not clashing, claims will arise. The manufacturers of this country, whatever may be their troubles, must yield with all their fellow-citizens to that system of compromise on which all our institutions are adjusted. We cannot ask any legislation for our advantage unless it be, if not equally for the benefit, at least not injurious to the rest of the community. On this ground we are willing to base our present application for relief. We come, without distinction of party, and ask to be heard upon strictly national considerations, that, if any enactment is consequent upon our petition, it may be regarded as permanent and not partial legislation. We ask not for relief to-day which may be withdrawn to-morrow; but for a settled policy. We ask to have the wisdom of all interests and all parties applied to the preparation of such a system as will be permitted to stand, subject only to the improvements which experience and time may dictate.

It cannot be questioned, that a large supply of iron is necessary to the rapid progress of any country in all departments of industry and the arts, in civilization and the material well-being of the people. The production of iron in Great Britain is equal to that of all Europe besides; while her consumption is equal to a million and a third of tons, or about 100 lbs. to each individual of the whole population. Belgium falls little, if any, short of an equal consumption for each inhabitant. Sweden would stand next in order but that she exports so much of her iron as to remain far behind Belgium in proportionate consumption. France consumes about 30 lbs. for each person, and of this, about one-tenth is imported. The rest of Europe does not consume 10 lbs. each person, and the remainder of the Old World does not reach a consumption of 5 lbs. In this respect, the enterprise and industry of the people of the United States have not permitted them to remain behind; so that, despite of obstacles the most formidable, and the most vacillating legislation, we stand in the front rank of nations as to the consumption of iron. Our consumption is equal to that of Great Britain for each inhabitant; but we import about two-tenths of the quantity consumed. Such is the abundance of raw materials, such the enterprise of our people, such the tendency to employ iron, and so greatly are the facilities for transportation multiplying, that we might with certainty outstrip the world in its production. All that is needed to secure such a result is a steady home market. Pennsylvania now produces as much iron as Great Britain did in 1820; her product has doubled in ten years, under great disadvantages, and in ten years of favourable legislation, it might be doubled again. Pennsylvania now produces as much iron as France; more than Russia and Sweden united; and more than all Germany. Yet how many States of the Union will ere long manufacture as much as Pennsylvania, for there are few in which the raw materials do not abound. Our population is destined to increase in a very rapid ratio; under a wise policy the production of iron would far more than keep pace, until we should be finally as much distinguished for the consumption of iron as we now are for the production of cotton.

The policy of purchasing only in the cheapest market sends not only the people of the United States, but of all the Continent of Europe, and in fact of all the world, to Great Britain for iron; for there the cost of making is one-half less than here, and in still greater disproportion with most other nations. The difficulty is that the manufacturers and merchants of that country are not governed by the cost of production in selling their commodities, but by the extent and urgency of the demand. When there is a demand, the prices are at the highest; when there is not, the world is invited to a cheap market.

If it be objected to such a development of the manufacture of iron, that the cost of production is too great in the United States, and that we ought rather

to import that which is purchased cheaper in other countries; the reply may be made that, Great Britain being the only country in which iron is sold at lower rates than here, our demand could only go to that market; that if sound economy requires us to obtain our supply of iron in Great Britain, the same motive would send all other nations to the same market. But our orders alone could not be filled without so raising the price as to preclude all possibility of our obtaining a full supply. If we should order from Great Britain in one year, additionally, half the quantity of iron we now manufacture, prices would go higher than they have been for a century, in England or America. The British iron market is cheap when you refrain from it, not when you press upon it. The cost of manufacturing iron is far from being the only, or even the chief, controlling element of the price. The manufacturers and holders of iron in Great Britain are extremely sensitive to a demand for any increased quantity of iron or to any increased urgency of demand, whether from abroad or for home consumption.

A million of tons of iron, which is the amount of our consumption when the industry of the country is suffering under no depressing causes, would have cost in Great Britain, in 1843, at the prices then prevailing, (taking half the amount of pig and half as bar iron,) £3,500,000 sterling. In 1846, the same quantity would have cost £9,000,000 sterling, at which price it was more economical to manufacture than to import. These high prices gave an immense impulse to the production of this country, and showed how promptly capital and enterprise combined to overcome an emergency by which the country was threatened with a deficiency of the indispensable article of iron.

Had we even a stipulation, by treaty, on the part of the government of Great Britain, that we should always be furnished with iron in that market at the low rates now current, say a million of tons for \$20,000,000, how could we pay for it? We already import more than we can pay for in exports.

All the shrewdness and enterprise of our merchants are constantly at work to increase our exports; not only is everything exported that will pay a profit, but every article that will pay a freight. How absurd to suppose we could pay \$20,000,000 additional for iron! Any attempt to supply ourselves with iron from abroad would, if persevered in, reduce our consumption from 100 lbs. for each person to far less than half that quantity, besides abridging our imports of other articles, and wholly deranging our foreign commerce.

As manufacturers of iron, we freely admit that we enjoy in Pennsylvania, and, we may add, in all the United States, very manifold natural advantages. If we could now boast that exemption from injurious rivalry enjoyed by the British manufacturers during the rapid growth of their industry, we could safely promise even greater results than have been witnessed elsewhere. Look, for a moment, at the circumstances under which the British manufacture of iron was developed. There was no surplus of pig iron in any country of Europe, and the article was unknown in European foreign commerce. All that England ever imported was a few thousand tons from the colonies of Pennsylvania, Maryland, and Virginia, and this was finally cut off by our Revolution. The English manufacturer of pig iron had no rival, and required no protection. The only competitors in bar iron were Russia and Sweden; their prices, from 1780 to 1849, ranged from £12 to £25 per ton. But as if this high price was not ample protection to British manufacturers, the government advanced the duties fifteen times between 1780 and 1820 without one reduction, increasing them from £2 10 to £7 per ton, affording the double protection of high prices and constantly increasing duty.

Between 1780 and 1825 Russian and Swedish bars could not be imported and sold in England for less than £20 or \$100 the ton; this gave the English

manufacturers entire possession of the home market for all purposes to which their iron was applicable, and yet their price was always below the foreign.

In contrast with this, the American maker of bar iron competes with rivals whose average home price is only £8 or \$40 the ton, and who, at present rates of iron in the British markets, and duties here, can put their bars in our market at \$40, duty paid. It is true, they lose money by the operation, but they would lose more by selling at home and thus further depressing the markets in which they must sell three times as much as they export. Thus they preserve their own, and ruin the markets of their competitors. During the rise of this manufacture in Great Britain, pig iron was worth in their market over 100 shillings, generally 120 shillings. The American manufacturer encounters pig iron sold in Scotland for years together at from 35 to 45 shillings, and which can now be put down in our markets, duty paid, at 60 to 70 shillings.

If we ask relief against such ruinous competition, we derive countenance from the fact, that British manufacturers constantly appealed to their government for protection under the favourable circumstances we have noted. We have seen with what success. The time was not long until, in 1825, the manufacture having attained ample growth and power, it could dispense with all aid, and defy competition. Great Britain had then risen to the rank of the largest consumer of iron in the world.*

If this business has been overdone in Great Britain, the evil consequences have fallen upon the manufacturers. The public has enjoyed an immense advantage in the abundance of a material so important in every department of industry as iron. The fluctuations in price which have ensued from this large production have been of late years so great as to cast in the shade all other commercial changes of price. The range of these fluctuations in pig iron during the last ten years is from £1 18s. to £5 12s. 6d., and in bar iron £4 10s. to £13, or about 200 per cent.

In one extremity of this fluctuation, British iron becomes too high to import under a revenue duty; in the other too low to admit of home production. In the one extreme we cannot afford to use it; in the other, it paralyzes our efforts to manufacture for ourselves.

The legislation asked by American manufacturers deserves not the odium so frequently heaped upon it. We know that we can furnish to the consumers of this country a million of tons of iron cheaper and better than it can be had abroad. We ask for defence against those commercial fluctuations which occur in Great Britain, from causes wholly originating there, and which, while they thrust down the prices of iron there far below the cost of making, throw large and irregular quantities into our ports, disturbing the regular course of industry here, breaking down our markets, and carrying ruin, at each such invasion, into many establishments. If we ask aid against such irregularities, it is no more than we should be obliged to do, if the manufacture in the United States were as greatly developed as in Great Britain, and enjoying, in all respects, equal advantages. If that were the case, each of the equally powerful competitors would seek to relieve their home markets in seasons of depression, by thrusting the rejected surplus upon his rival; and each would seize the opportunity of high prices in the other to make large exports, until both markets, unable to maintain any high prices to compensate for unfavourable periods, would sink into hopeless depression, and the business perish or be greatly impaired. Against such consequences both would appeal to their respective governments for protection, not for monopoly; for that security against ruinous fluctuations, and that regularity in sales, indispensable to the success of industry. Competitors at home can observe their mutual progress, and take their measures of defence in time, but that competition

which comes from abroad, cannot be watched, nor preparation made for its sudden inroads. If the British manufacturer is prevented from flooding our markets at less than the average upon which his business thrives, a mere revenue duty will be ample protection against the great advantage he enjoys, of employing labour at less than half the cost paid in the United States.

Among those most deeply interested in the vigour and prosperity of our iron manufactures are the farmers who furnish food, and the planters and manufacturers who furnish clothing, for our operatives in iron. We cannot here fully unfold the chain of mutual interests which binds all branches of industry together, nor exhibit its strength, and the importance of preserving it unbroken. We ask attention to only a few prominent facts. When the ports of Great Britain were opened to our agricultural products, it was fondly hoped that our farmers would find there an unlimited market for wheat and maize. At the present moment, however, these are very little higher in Liverpool than in Philadelphia, and the pressure of any increased export would sink prices there below ours. At the present rates of iron and flour in Liverpool, the flour made from an acre of good wheat will about exchange for a ton of pig iron, and pay for its transportation to this country. If we take the product of the acre at four barrels, worth now in our market \$18 or \$20, it will exchange here for a ton of pig iron of far superior quality.

But farmers who feed the manufacturers of iron in the United States do much better than exchanging the product of an acre for a ton of pig iron. A furnace yielding 4000 tons of pig iron gives employment to two hundred labourers, each of whom consumes annually fifty dollars worth of food. Of this but one-tenth is expended for bread; the remainder is consumed in the shape of mutton, veal, pork, beef, poultry, potatoes, turnips, beets, and other products of garden, field, and orchard; the production of which in great variety is an accompaniment of all good husbandry and profitable farming. To import 4000 tons of pig iron requires the product of 4000 acres of wheat. But in our home markets the product of 500 acres will exchange for 4000 tons of pig iron. An acre of potatoes, the cultivation of which does not exceed that of Indian corn, will exchange for eight tons of pig iron in the markets of Philadelphia. The farmer who, with 100 acres of wheat, prefers the foreign market, will receive for his crop 100 tons of pig iron, at present rates worth \$2000, whilst he who has a hundred acres of potatoes can exchange his crop at home for 800 tons of iron, worth \$16,000.

Wheat sent to a distant market, which fluctuates according to the supply and demand, must be sold without reference to the cost of production, and without control of the producer, for what it will bring in competition with all the world. What the farmer sells at home is at his own price, and is sold or held according to his discretion. Well cultivated lands dependent on a foreign market may be worth from \$5 to \$20 per acre; those that have the full advantage of a home market are worth from \$50 to \$200. If the production of iron in Pennsylvania were continued in full activity for ten years, it would double the value of her own lands and make a vast contribution to the value of other lands and property beyond her boundaries.

What is applicable to the propriety of sending wheat to a distant market to be exchanged for iron, is just as true applied to the expediency of sending raw cotton to England, to be exchanged for manufactured cotton, or any other foreign goods. The cotton plantations can feed the operatives necessary to manufacture all their cotton; and such a policy would triple the value of every cotton plantation in the country. To produce this additional quantity of food would probably require no more labourers than are now employed in growing cotton. It would only require that division of labour which is as

important to the success of the planter and farmer as to that of any other producer.

To manufacture 800,000 tons of iron, the present product of the United States, gives support to upwards of 250,000 persons, to whom at least twenty millions in wages must be paid. Of this sum \$1,000,000 will be expended in coarse cotton fabrics for clothing and furniture, \$3,000,000 for woollens, and \$3,000,000 for other items of clothing and domestic comfort. The \$20,000,000 earned by the operatives in iron will thus be diffused over the whole country, giving vigour and activity to numberless branches of industry. The South will furnish cotton, sugar, and rice; the Middle States bread, potatoes, and meat; and the Northern States the products of the loom; whilst thousands of tailors, hatters, shoemakers, and other tradesmen find constant employment in ministering to the necessities of the makers of iron, consuming themselves an additional quantity of food and clothing by a demand distributed in like manner.

It is said the domestic cost of manufacturing iron is too high to be sustained by any sound legislation, or to warrant any large consumption. We reply that our whole supply cannot be imported as cheaply as we manufacture it; for the reason that the cost is not the only controlling element of price, and that our large demands, if made upon the British market, would quickly enhance prices far beyond the domestic rates. We must, therefore, manufacture at home at least three-fourths of our consumption; and, to do this, our manufactures must be maintained in full vigour by remunerating prices and a steady market. Iron costs twice as much to manufacture here as in Great Britain; because employers here pay double, and more than double, for wages for labour. The labourers of the United States can be fully employed at the high wages which prevail here, and we are not prepared to say that these wages are more than a just compensation for labour. It is certain that in most countries where less rates are paid, a large mass of the population is in a state of destitution, and sunk to the lowest grade of human existence. In this country, where physical well-being is so easily attainable, should we not feed, clothe, and lodge our labourers in comfort, and keep them out of the poor-house? The wages now paid are only sufficient for this, and to enable the prudent to make some savings for sickness, reverses, and old age. We are not, therefore, in favour of any system which contemplates a reduction of wages, and a consequent degradation of our working men. We believe that the consumption of every country is regulated by the wages of the labourer: if he is liberally paid, he will consume freely. The mass of the consumers in a country must be the labourers; and, when these are able to exact a fair compensation for their toil, all prices must soon be adjusted upon the same scale. The manufacturer will demand for his product a price proportioned to the cost of labour; the farmer must do the same, and so on through the whole circle of industry. The labourer himself contributes to sustain these prices by a consumption proportioned to his income. All persons concerned in this adjustment being in a condition to ask and obtain justice, the whole system of consumption will be regulated by the rights of all and the means of all. In this state of things, the largest possible consumption can take place; because it will be the result of a fair exchange. The stimulus to exertion and increased production will be complete, because every product of industry can be exchanged, at a fair rate, for other products. If no disturbing cause intervenes, the production and consumption need have no other limit than the physical ability of the producing parties and their mutual wants.

In full activity of business in the United States, our consumption of iron has reached 100 lbs. for each person. If no disturbing cause had interfered, we should now be consuming 200 lbs. Our farmers could amply feed the

labourers needful to such an increased production, and our machinists and mechanics could soon, under the operation of such a system, work up and prepare it for consumption. Every branch of industry would have all the rest for customers; and, if all measured their values by the same scale, all would be rewarded according to their industry. It is well known that low prices of iron are no boon to those who buy to work up and sell, and that the seasons of highest prices are often periods of largest consumption. In 1847, pig iron ranged above 30 dollars per ton in this country, yet at these high prices the whole stock of that year, estimated at 750,000 tons, was consumed; all the old stocks and remnants were swept off, and it was perfectly apparent, to those well acquainted with the state of the market, that there was an actual deficiency of supply to the extent of very nearly, if not quite, 100,000 tons. In 1849, with pig iron at 20 dollars and bar iron at 50 dollars, the consumption of the country has probably fallen off one-third, and the production one-half. With this diminished production domestic stocks are now accumulating rapidly. Of the amount imported this year a very large proportion yet remains in the market. The quantity of iron now on hand in this country is estimated at 300,000 tons; and of this one-half is British. The manufacturers of castings, of machinery, and hardware now find that the consumption of their articles is checked, and that the low price of their raw material is not only no benefit, but a positive evil, and they are ready, equally with the makers of iron, to ask for a remedy. A similar result will be found by comparing all the periods of high and low prices.

To whom, then, enure the advantages of cheap foreign iron? Abundance of food is no more beneficial to a man in the agonies of a fatal disorder than cheap iron to a paralyzed industry. The ability of the country to consume iron depends on the vigour and activity of all departments of industry. If agriculture languishes, the consumption of iron is diminished; if the machinery of the north is idle, or partially so, the demand for iron falls off, and so if cotton or sugar is selling at inadequate rates.

At the present moment, various interests are suffering from the utter stagnation of the iron trade, as the operatives in iron will this year, 1849, consume in supply of their wants some twelve millions of dollars less than in 1847. This alone is enough to carry serious injury into numberless channels of industry. It especially affects the consumption of cottons and woollens; for the use of these can be abridged to a greater extent than food. All interests are, therefore, bound together by common ties; when one suffers, all suffer. It is a great mistake to suppose that the producers of cotton, sugar, rice, and tobacco have no special interest in the activity of manufacturing industry in the other States. A very large proportion of the cotton crop is now consumed in the United States, and thus kept from the British market, already so liberally supplied as to give British merchants control of the price. When British iron is exported to us for want of a market at home, we take it at our own price; when we order large quantities of iron, we pay what they can exact. Our cotton is mainly exported, disgorged upon the British market, and the price is made in Liverpool. When British manufacturers shall be compelled to come hither for their cotton, the price will be made by the planters. The present supply is so large, that the price is yearly the result of mere speculation. What is sold in this country is clear gain to the planter, as the whole crop would sell for no more in Great Britain than the quantity which now goes there. If half the crop was consumed at home, the other half would sell for as much in Great Britain as is realized for the quantity now exported. This result is not only attainable under favouring legislation—but it might have been attained before now, by that wise policy which stimulates home industry to its utmost capacities. By such a policy

the consumption of cotton and iron could be doubled in a few years, with immense advantage to the wealth and happiness of our whole population. It is the interest of the planter not to struggle for that division of labour among nations; which makes one nation a planter of cotton; another of sugar; another a maker of iron; another a spinner; another a weaver; another a tailor; and so on; but that division of labour which mingles these pursuits in the same country, in the same county, in the same town, and, to some extent, on the same plantation. This is the division of labour which begets a vast production and consumption at home, and an internal trade with which no foreign commerce can ever vie.

Who can doubt that, if the planting States were legislating for themselves, their first care would be to become more independent, to diversify their labour, and vary its products? What such legislation would compel them to do, they can now do under that national legislation which is invoked by others. They are already entering upon that career—it will be found not only the sure road to prosperity for them, but also for us. We so fully confide in the doctrine of the division of labour at home, that we not only trust the cotton planters will manufacture as much of their cotton at home as they can, and feed the operatives thus employed, but also manufacture as much of their iron as they can. There is room for all, work for all, and market at home for such a large portion of our products that the remainder will not overcharge the channels of foreign commerce and be sacrificed for the advantage of foreign merchants and manufacturers.

We object to the doctrine that industrial pursuits are subordinate to foreign commerce; and that the latter is to be considered as the rightful patron of industry. In our view, industry stands first in natural order, and should be the first care of the legislator. Commerce is merely an agency, the charges of which, as well as its powers, should be kept to the lowest point consistent with efficiency. It may suit those engaged in commerce to insist upon the "Let us alone" policy, for doubtless merchants can take care of themselves, and thrive not the less, when the producers, from whom their profits come, are suffering most. The manufacturer has, in all countries, asked for special legislation, and under its good effects the present manufacturing systems of Europe and this country have grown to their present magnitude. The relative importance of the domestic production of this country and its foreign commerce may be seen in the fact that our foreign commerce yields from six to eight dollars worth of foreign commodities to the consumption of each individual of our population; whilst the domestic industry of the country furnishes not less than from 75 to 100 dollars for each person. Shall we pursue a policy impairing the power that produces the larger supply, in the vain attempt to add the worth of a dollar or two a head to the quantity of foreign commodities consumed? And be it noted, that every dollar a head added to our consumption of foreign goods adds over 21,000,000 dollars to our imports.

If an ample supply of iron be indispensable to national progress and national welfare, and if the whole of that supply cannot be imported as cheaply as it can be made at home, the principle which should govern legislation applied to this industry, and to others in like circumstances, is clearly discernible. If home production, on which we rely for more than three-fourths of our consumption, is not sustained in that activity which ensures its proceeding with economy and advantage, it must flag; and the product being diminished, a greater demand must be thrown upon the foreign market, enhancing the prices of importation. But if the home production is adequately sustained by a free market, it can supply all the channels of consumption. Legislation, marking closely the line of vigorous productions at home, will encourage

importation, with the double purpose of obtaining revenue and keeping the manufacturers at home to fair prices.

Sustain the domestic manufacturer at the point of full production, and then admit the foreign article freely. The more closely our revenue enactments approximate this object, the more perfectly will they encourage domestic industry, obtain the largest attainable revenue, and best secure the interests of consumers. The manufacturer, constantly struggling to keep up his prices, will be as constantly met by foreign iron, selling at such rates as to keep him to the line of public advantage. It is the operation of a well-managed competition between the domestic and foreign producer, which results in the greatest benefit to the consumer. If the consumer is driven to a foreign market for his supplies, or for too large a proportion of them, prices will be inordinately advanced against him; while, if the foreign market is prohibited, or too heavily burdened, the same undue advance may take place at home. But if foreign iron is introduced at the point designated, it not only works no injury, but produces positive public good, as to revenue and prices, and also as to the increased consumption of iron. There are certain average rates, at which manufacturers of iron in this country can live and flourish, and these rates are very little, if any, above those to which the often recurring fluctuations of prices in Great Britain are carried. At these rates, which are easily ascertained by the legislator, the line of competition can be established, with the greatest advantage to the consumer. They will not exclude foreign iron; but frequently attract it. During the last fiscal year, the very large importation of 315,000 tons of iron has taken place. Of this, much the larger proportion has probably been sent to us on foreign account, because there was no demand at home; it was sent to save the home market, already broken down, from further depression. It has broken down our markets; and, if sold at present rates, will not yield the makers a penny of profit. This iron, coming thus to a bad market, came because it would have been worse for the holders to keep it at home. If previous legislation had shielded our market so as to maintain prices remunerating to our manufacturers, the additional duty necessary for this purpose would not have deterred the export of iron to this country; for while those who shipped it to our ports must have paid a higher duty, they would have realized better prices. A ton of iron rails, under the present tariff, at the prices prevailing in 1846 and 1847, was charged with a duty of twenty dollars, which was almost prohibitory, and therefore produced little revenue, making foreign rails cost 90 dollars per ton. During the year 1849, a ton of rails has been charged with only eight dollars, and has, of course, produced but little revenue; whilst a ton of rails were laid down in our market at 45 dollars, injuring the domestic producer to an extent that is incalculable. A system of revenue which would meet the low prices by a proportionate increase of duty, and make provision for high rates by a like reduction, never excluding the foreign iron, would, we believe, meet the exigencies of domestic industry, and greatly increase the revenue. Whatever may be the advantages of the *ad valorem* system in other cases, they are more than neutralized by the fluctuations of the prices of British iron. It is true that a part of this objection applies with equal force to specific duties; for, when these are high enough to meet the difficulty of low prices, they become prohibitory when prices rise. These considerations furnish a strong inducement for special provisions in our revenue system in regard to foreign iron. A system could thus be devised which would give a mighty impetus to the production and consumption of iron, and to other dependent branches of industry. A home competition could be thus ensured, which would, in the end, reduce the price of iron to the lowest limits consistent with undiminished production. Under such a policy, we should soon

surpass Great Britain in the quantity of iron made and consumed, as much as we do now in the quality. We should employ hosts of labourers, and attract them hither from all quarters of the world; and for every million of people which this scene of industry would draw to our shores, we should be furnished with an additional home market, equivalent in amount to and far more remunerative than the average export of our foreign trade.

In closing this memorial, we ask your intervention in our favour, and the insertion of such provisions in our revenue laws as will "regulate commerce with foreign nations" in iron, and exclude from our markets the results of those destructive fluctuations and irregularities which originate in foreign causes, and should expend their force on foreign shores. This being done, we only ask further that such duties be imposed upon foreign iron as will bring the largest revenue to the public Treasury.

Extracts from a Paper submitted by the author of the Memorial.

A PROTECTED MARKET.

There is great misapprehension on the subject of the PROTECTION asked for industry. The term is ill-chosen; because it implies special favour granted to particular branches of manufacture. But it is far from being a mere concern of individuals; it can be shown to be equally a matter of public policy. Suppose the makers of iron in Great Britain and the United States to have equal advantages, and that the manufacturer is carried to the utmost extent and the lowest point of remuneration by the home competition in each country; and that the average price in each is the same. If any state of industry could, with advantage, dispense with protection, it would be the case supposed. But it would be clearly the interest of both countries to protect their home markets, even in this case of perfect equality. It would be sound policy to keep the manufacture of an article so important as iron in prime vigour and progress, that the quantity might be increased, and the price reduced by the gradual process of home competition, which, in a protected market, is a severe but sure operation. One of the greatest trials the manufacturers encounter in such cases is that fluctuation which occurs every few years in all mercantile communities. To bear up under all these, and maintain the full vigour of protection, is a hard trial upon makers of iron, the more so, as in their case their expenses do not admit of being abridged, nor can their manufacture be diminished under a limited demand without heavy loss. Seasons of depression must come in both countries in the case supposed—periods when the markets of each would reject, and be unable to consume, the ordinary quantity. It must be thrown somewhere, for neither makers nor merchants are able or willing to hold the surplus of iron until business recovers its tone and makes its usual demand. If the iron thus remaining on hand in Great Britain is thrown into our markets, it will wholly break them down if firm, and increase and continue the depression if already down. Between the two countries, while prices were up, there would be no transactions in iron, but the conflict would be incessant in periods of depression. It may be safely assumed, however, that without help the manufacturers could never recover from such a conflict; a few years would end the struggle by prostrating a large portion of those engaged. The business would have to be re-organized.

It would be sound policy, therefore, to protect each of these markets from the irregularities of the other. This course is best for the makers of iron, as well as for those who are special consumers, to whom it insures, in the long run, the cheapest supply.

FOREIGN IRON—ITS INFLUENCE ON PRICES.

As every country is dependent mainly on its own industry for its supplies, it is important that the industry which furnishes these supplies should be suitably sustained. The prices of the nine-tenths furnished at home should range at such rates as to keep the production active and increasing. Unless it can be demonstrated that the whole supply could be permanently imported cheaper, it would be suicidal to extinguish the industry on which we are dependent for nine-tenths, in a vain experiment to purchase cheaper elsewhere. The prices in the home market should be such as are made by fair competition in the home market, in which all parties interested can take care of themselves. If our iron is made at home, all the labour which goes into the cost should be adequately compensated; the farmer who furnishes food for man and horse, the manufacturer who furnishes raiment, the labourer and operative who are immediately employed in the production. All these and the consumers must settle the price; the elements are among them, and their combined action must maintain a result the nearest to justice, because they all look to their own interests.

It is unjust and unwise to disturb and change this result by introducing a new element in a supply derived without restriction from foreign trade. Upon that trade we are not in any sense dependent for pig and bar iron; we should, indeed, at this time, be makers and consumers of a much larger quantity than we have yet used, if we had not imported a ton of iron the last 20 years. We make the *quantity* we consume, much cheaper than we could import it. Is it just that the tenth of our consumption which we import should regulate, to the injury of the makers of the other nine-tenths, the prices of iron in this country? Yet the price is for the most part controlled by the movements of foreign trade. It happens that our sea-ports are also the chief markets for distribution of our domestic iron. The prices of every country or district are made at its chief markets. If the consumption of iron on the sea-board is 300,000 tons per annum, the import of 50,000 of foreign iron will control the prices, because it comes in to be sold for what it will bring. It is at once offered below the domestic article, and consumers seeing a disturbing cause in the market, pause until the effect is seen. A pause in the purchase of iron produces a fall, because some sellers must realize, and buyers take the advantage and keep it. The whole mass of the domestic iron is brought to market to keep pace with consumption, and the price demanded is a remunerating rate, and unless this is obtained the business must perish. The quantity imported is a mere overplus—a remnant from British markets, the sale of which at high or low rates is not a very important or vital matter to the manufactures who sent it. At most, it is but 10 per cent. of their product, and may be considered as their profit, greater or less, as sold. What is vital to them is their *home price*; if that is fair on the average, they can afford to risk 10 per cent. of their production in our market. Let any one who knows how prices are made to vary, not only by actual events, but by rumors and suspicions, reflect upon the effect of an additional 10 per cent. of a foreign article thrown in upon a previously balanced market, and he will perceive not only the necessary depression but the injustice of it to the industry affected.

But there is a feature in foreign trade which greatly increases the mischief of leaving the market under its control. It is to a most extraordinary degree uncertain and fluctuating. The importing merchants are governed in some degree, doubtless, by the actual demand, and their imports might, if exhibited, separately show some regularity. But a large portion of the imports are sent upon speculation, and the quantity depends on markets abroad and the thousand contingencies which may determine a larger or less export to our

shores. The irregularity of our imports of iron from Great Britain is so striking as to demonstrate the impolicy and injustice of making the prices of the domestic product subservient to it. Beginning with the year 1820, coming down to 1845, and leaving out the fractional hundreds, the following figures exhibit the number of thousands of tons of iron of all kinds imported into the United States from Great Britain each year in its order :

Year.	Tons.	Year.	Tons.	Year.	Tons.
1820,	8,000	1830,	21,000	1840,	72,000
1821,	9,000	1831,	41,000	1841,	112,000
1822,	15,000	1832,	45,000	1842,	107,000
1823,	13,000	1833,	62,000	1843,	38,000
1824,	11,000	1834,	47,000	1844,	102,000
1825,	13,000	1835,	63,000	1845,	68,000
1826,	12,000	1836,	91,000	1846,	—
1827,	21,000	1837,	54,000	1847,	—
1828,	22,000	1838,	78,000	1848,	—
1829,	17,000	1839,	85,000	1849,	315,000

These figures show a variation in the supply of iron derived from Great Britain of from 10 to upwards of 200 per cent., between one year and the next. Small as this quantity appears, compared with our whole consumption, it would always control the prices in New York, and thence those in the country. How little these fits and starts of commerce are like the sober pursuits of industry at home, where the annual product only varies to increase with the gradual increase of labour, capital and consumption.

How can it be just to make the labourer's wages depend upon the variable movements of foreign trade?

MANUFACTURE OF IRON.

We cannot manufacture iron in the United States as cheaply as it is made in Great Britain. Because:—

1. The erection of furnaces and machinery costs from a third to a half less, there. Iron enters largely into these constructions. The wages of all mechanics are not more than half our rates.

2. The wages of the operators in iron works are about half that which is paid here.

3. The cheapness of money there has enabled the manufacturers to prosecute their business with more vigour and more economy; and to introduce at once many modes of saving expense, the cost of which cannot be reached by makers here.

4. The manufacture in its present improved processes has many years the start there. We might, and, with our home market secured to us, could soon equal them in all departments, as we do in many now.

If we could import and pay for our whole supply at the low rates, it would be more difficult to refute the advocates of the cheap market. The iron market in Great Britain affords a spectacle of fluctuation and speculation which has scarce any parallel. The range of prices varies from below the cost of manufacture to one hundred and fifty per cent. advance upon the actual cost. It has been with British manufactures, for the last twenty years, a constantly recurring feast or famine. Iron being an article not subject to deterioration, it is deemed safe to hold, and speculators step in when prices are at the lowest. Not only so, but at extremely low rates, iron enters into a large consumption, for which it is too expensive at higher rates. At the low rates, this increased consumption begins; contracts are made, enterprises are commenced, plans and estimates are gone into, which produce at last an effective demand for iron sufficient to enable makers and holders to advance the rates in proportion

to the wants of buyers, who hasten to supply themselves when the advance begins.

PROGRESS OF THE MANUFACTURE OF IRON IN GREAT BRITAIN.

These fluctuations in price cannot be wondered at if we note the progress of the manufacture. The following is the estimate of the quantity produced in the years named :—

Year.		Exported to all the world.		Consumed.
	Tons.		Tons.	
1810,	294,642			
1820,	368,000	91,766		276,234
1825,	581,367	69,328		
1830,	678,417	130,417		
1835,	1,000,000	219,203		
1840,	1,500,000	268,328		1,231,672

The increase in product in thirty years was over five hundred per cent.* The increase in the export was less than three hundred per cent. The increased consumption was very nearly five hundred per cent. There was in that period no parallel to this progress in the world. It is not hard to comprehend the share which this increased consumption of iron had in the *material progress* of Great Britain.

If this manufacture is not overdone in Great Britain, it would be difficult to find any business overdone. It is only possible to keep up this large production through the operation of those fluctuations, by which, in times of depression, the iron is taken into a large consumption at the low rates, and by which the makers indemnify themselves for the losses of one period by the high prices of another. By this system they export largely when they can do no better, and raise the prices so high at times, that exports must be greatly diminished. Upon this system of variation, the makers there thrive; but can these fluctuations be introduced elsewhere with advantage, or even without ruin? They are an incident to over-production there—they are an incalculable injury when brought to bear upon our industry.

PROTECTION OF PRICES.

As the progress of the manufacture of iron in Great Britain is one of the greatest achievements of industry in modern times, it may be worth while to consider what protection fostered and secured this wonderful growth.

Previous to this growth, pig iron had been scarcely known in commerce. England had no rival in the production of that article that could disturb her markets. The price may be shown thus :—

1782 } to 1803 }	20 years,	{ £3 to £4 }	Average £6.
1803 } to 1818 }	15 years,	{ £7 to £9 }	Average £8.
1818 } to 1840 }	22 years,	{ £4 15 to £11 }	Average £6.
1840 } to 1849 }	9 years,	{ £2 to £5 }	Average £3 5.

* The increase in fifty years was one hundred per cent.

It will be seen that down to the year 1840 from 1782, in which period the production of iron in Great Britain had increased from 150,000 tons to 1,500,000, or tenfold, the makers enjoyed a price averaging over £6, and very seldom below £5. Upon this price the business flourished beyond precedent. After 1840, it became evident that there was an over-production, and the British market broke down. The price of Scotch pig, which, after 1840, controlled the market, fell to £2, and even below that rate. It became the subject of speculation and fluctuation beyond any article of commerce.

It was the protection of this continued high price, for 50 years, which stimulated the production of pig iron. The revenue duty of $27\frac{1}{2}$ per cent. was of no consequence, the importations of pig iron were too small to have any effect upon the markets.

Large importations of bar iron were made into Great Britain between 1782 and 1840; but that it may be clearly seen how far this importation interfered with the domestic product, note the prices of Russian and Swedish bars, the only kinds largely imported.

Russian Bars,	1782	13 years, from	£10 15	Average £16.
	1795		16	
Do.	1795	8 years, from	£17	Average £21.
	1803		25	
Do.	1803	17 years,	£12 10	Average £16.
	1820		22	
Do.	1820	20 years,	£14	Average £19.
	1840		26	
Do.	1840	9 years,		Average £16.
	1849			
Swedish Bars,	1782	from	£14 15	Average £16.
	1795		18	
Do.	1795	from	£19	Av'ge £22 10.
	1803		26	
Do.	1803	from	£15 10	Average £17.
	1820		21	
Since	1820	the average has been about		£13.

The above prices are exclusive of duty, which was increased from £2 16s. 6d. in 1782, by *ten different advances*, to £6 10 (and £7 18s. 6d., in foreign ships), in 1820.

These prices were, indeed, in no degree an obstacle to the British manufacturers; they were, in fact, so high that no heavy importations could take place.

The largest importation in any year between 1800 and 1814 of bar iron, was 52,873 tons in 1802; during nine years of that period the importation did not reach 30,000, and was sometimes below 20,000 tons.

From 1815 to 1840, the largest quantity of bar iron imported into Great Britain, was 25,033 tons in 1836, but the average for the whole period was considerably below 20,000 tons.

The British manufacturers required no legislative aid after 1800, yet such caution was used that the duties were increased from time to time to 1820, and were not removed until 1825.

PROTECTION IN UNITED STATES BY PRICES.

The British maker had competitors who furnished iron, exclusive of duty, at from \$65 to \$100 per ton.

The competitor of our manufacturers has furnished bar iron,

From 1815 to 1830, at \$50	{ highest \$72.
	{ lowest \$31.
From 1830 to 1849, at \$38	{ highest \$55.
	{ lowest \$22.

But low as the averages are, compared with those against which the British manufacturer had to contend, they afford an inadequate idea of the destructive effect of this competition. The averages are comparatively high from the excessive range of the fluctuation. For three years, from June, 1820, to July, 1824, the price did not exceed \$46, and did not average over \$42.

From March, 1827, to July, 1836, the price did not exceed \$46.

From April, 1829, to October, 1835, the price did not exceed \$37.

From March, 1830, to March, 1833, the price did not exceed \$33, and for a year of this period it was under 27.

For three years, including 1841 to 1843, the price was at \$24, and during 1842 as low as \$22.

It is such prolonged depressions as these which seriously injure, if they do not ruin, the maker of iron in the United States. He cannot meet such exigencies, neither by reduction of his expenditures, by reducing wages, nor by diminishing the amount of his product. He must continue his business at a serious loss for years, or he must stop and be ruined.

It cannot be doubted that these periods of low prices have hindered the progress of this branch of industry to a very important extent. It is scarcely extravagant to say that, with the same comparative protection which has been enjoyed in Great Britain, the product here would now have been scarce less than that of that country. If the home market had been equally secure to the makers here, as that of Great Britain was to the makers there, the consumption of iron here might now be 1,500,000 tons. The higher price would have been no obstacle; for, where all labour receives a corresponding compensation, the price is no obstacle in the exchange of labour. These fluctuations in prices, introduced from Great Britain, have proved an incalculable evil to the whole industry of the country. The fact, that a portion of our annual supply has been imported at a very low cost, much lower than it could be produced for here, is no alleviation. Instead of consuming more, we have consumed less. Our consumers say that they work up far less iron at the low rates than when business is proceeding on the basis of home prices.

If, owing to the low prices of British iron, we consume 200,000 tons less of domestic iron, we prevent the circulation of a value of \$10,000,000, which, at \$50 as the average per ton of pig and bar, would be its cost in food, labour, clothing, &c. All who are concerned in this great exchange are thrown out of their usual routine of employment: the farmer loses his market—the labourer his wages—the manufacturer his living—all are made less able to consume, and of course others who are dependent on them feel and suffer by the change, until the \$10,000,000, by endless ramifications of the channels in which its benefits would have been felt, becomes hundreds of millions in its consequences. The effect of stopping the domestic manufacture is to throw business entirely out of the usual channels. It is too absurd to be held by any one, that the

elements which would go to make 200,000 tons of iron in the United States could be made available to import that quantity and pay for it. If imported, it must be paid for in something else than *iron ore, coal, wood, veal, mutton, potatoes, turnips, oats, rye, corn, and American labour.*

FREE TRADE.

It is a strange feature of free trade doctrines, that while they regard commerce as the great patron and regulator of industry, they wholly omit to make any allowance for the effect of commercial movement upon prices. The ability to make goods cheaply implies, with them, a willingness to sell them cheaply, without change of price. If all taxes, duties, and restraints were removed from commerce, the advocates of free trade seem to think the very facility of movement and transportation would furnish all the stimulus industry requires. They omit all notice of the fact that merchants, to whose tender mercies the producing classes are invited to commit themselves, are as much addicted to habits of thrift as other people; and that prices fluctuate more by these movements, and are more influenced by their operations, than by the efforts of producers. Merchants, in proportion to their number, are far better paid than manufacturers, and when the latter are starving, the former are often making large profits. It is quite as acceptable to the merchant to make a large profit on a few goods as a small one upon many. The interest of the producing classes is to furnish a large product and a large exchange, that the comforts, luxuries, and benefits of mutual industry may be extended to the largest number. It is their interest to reduce commercial power and influence to its just minimum, because it is a charge upon industry. All the profits of the merchant are laid upon the consumer, and proportionably reduce the ability of the consumer to increase his consumption, and thereby make a large demand upon the producer. The truth is, that merchants have grasped a power and wield it for their own benefit, which enables them to oppress both producer and consumer. However necessary this may be, the merchants are certainly not the appropriate patrons of industry; they, as shrewd men usually do, take care of themselves, and whether trade is free or not, no men can be in a better position to keep guard over their own interests. They survey the whole field of trade; occupying an intermediate post between consumer and producer, it is their interest to buy as cheaply as possible and sell as dearly. It is at their instigation that the doctrines of free trade are so loudly proclaimed. They and their friends are no doubt sincere. There is one great fact, however, which cannot be explained upon their principles—that industry, widely diffused industry, manufacturing industry upon the mighty scale now seen in Europe and the United States has grown up under the protection of commercial restrictions. The productive powers of man were never exhibited before the days of protective duties as they have been since. Commerce was free when Tyre, Carthage, the Grecian cities, Alexandria, Venice, Genoa, the Hanse towns, Holland, at their several periods of prosperity usurped the trade of the world. The merchants were then all in all—the merchants were princes, the producers slaves. Free trade would rapidly tend to the same results now.

If the question related solely to the prosperity of trade, there might be force in the position, that men in trade should be allowed to take care of themselves.

The problem for solution is not what will most promote the interests of those engaged in commerce, but what will best promote the interests of all.

So far from being that department of industry which most requires the care of government, or rather best deserves to have its wishes granted, commerce is really a tax, an incumbrance upon industry, to be reduced as far as

practicable. It is the expense incurred in distribution—an expense which, like all other mere expenses, should be kept at the lowest point consistent with the end in view.

What, then, will most promote the comfort and material well-being of the mass of the people? We reply, that industry, which furnishes the largest product for the consumption of the masses, whilst all the producers receive, by a fair exchange for their labour, their full share of those articles which minister to comfort and physical well-being; that industry, which, while it is thus successful in securing physical benefits, has a surplus large enough to maintain a good and efficient government, and all the advantages and enjoyments which belong to education, morality, philanthropy, and religion. Are these benefits to be obtained by merely removing restraints from the plans and movements of men in trade? This is no more true nor wise than to say that there should be no *checks or locks* upon the wheels which carry the goods to market.

We must inquire, what are the circumstances in which men will and can exert their utmost productive powers. Clearly, where they consider their compensation most secure, and where the division of labour can at once, and in the same locality, be carried to such a point that a large exchange of labour can be effected, free from the expenses of transportation and intervening profits. Producers being consumers, and these being also producers, that is their best business which is done most directly, because it is that in which they are most likely to obtain mutual compensation in the results of their mutual labour. In all large manufacturing operations, one of the first considerations entertained by those who contemplate such undertakings, is, the facility of selling the products in such quantities as may enable the manufacturer to sustain his business at the low prices to which competition may force his sales. The ready sale of the product is vital to the business, even if the profits are reduced to zero. The annual expenses of a blast furnace are, from \$200 to \$300 each day, an expenditure which will rapidly absorb the working capital of its owner, if not replenished by corresponding sales. In many of the iron establishments of this country, the daily outlay is equal to, and in some, over \$2000. A regular market is, therefore, indispensable. The manufacturer may estimate with reasonable correctness the demand and the competition of the home market, but must be wholly at fault in conjecturing what interference may come from abroad. He knows that his market at home may be disturbed, and, for a time, destroyed by any undue ingress of the foreign article; for experience has taught him that his sales are at an end for a time when a cheaper article appears. When this happens, buyers become “bears, and operate for a decline,” and this they effect by ceasing further purchases, until the market finds its lowest point—that is, until the necessities of the manufacturer compel him to come to the terms of the buyers.

NECESSITY OF A HOME MARKET.

The necessity of securing the home market to the home producer may be thus stated: A manufacturer has observed that his country has for a long period, been supplied with a certain article at a range of prices at which he thinks he could furnish it. He consults the consumers of the article, and they encourage him to go on, agreeing to give him the preference. He makes a large outlay and begins his work. His goods go off freely and he has the market. The foreign article must now be withdrawn or reduced in price; it cannot be withdrawn, for there is no other market, and the price is reduced. The home producer is now receiving his first lesson, and he must

reduce his rates also at the first stage of his operations; the foreigner only after a long period of success. It becomes now a struggle for existence: the foreigner having the accumulated wealth of a long career, determines to extinguish his young rival, and again reduces the price. The home producer applies to the government for protection, and though the whole array of free trade arguments are brought to bear against the application, it prevails, and a specific duty is laid which gives the producer a price at which he can maintain his production in full vigour. The foreigner, determined still to conquer the market, reduces his price according to the duty, or, in other words, pays the duty and enters the lists again. At this stage of the struggle, the whole quiver of free trade weapons are let loose upon the monopolist, who is charged with receiving a premium to the whole amount of the duty, to sustain a manufacture that ought never to have been started. The absurdity of not buying altogether in this cheap market, strikes the philosophers of the closet so strongly, that they cannot express their surprise at the dull intellects of mere men of business. To resume our case: the home producer is again forced to ask further protection, and to say that his business must perish if he does not obtain it. Again common sense prevails over theory; a heavier duty is laid and his business revives, though suffering severely from these interruptions, and by no means in the state of efficiency it would have been but for their influence. If it be supposed that the foreigner is unable to continue the struggle unaided, he applies next to his government for the removal of certain taxes, charges, duties, which bear upon his products, for the avowed object of enabling him to retain the foreign market, of which he is deprived.

Thus may a struggle be carried on for many years, to the serious injury of both parties—perhaps to their ruin. The operatives engaged in the home product, thus injured, must suffer severely; while the advocates of free trade cry out “let them fight it out;” the merchants, who are the real purchasers, find their interests greatly promoted by the contest, as the lion’s share falls to them.

It is thus, too, that the cheapness of a foreign market, which makes it the very climax of free trade arguments, is caused by want of demand for its goods; that want of demand arises from home production, which deprives the cheap market of their customers. The more the foreign market is thus cheapened by home production the more the necessity is increased to afford protection to that market, on which the home production is mainly dependent. Individual merchants and consumers are always prompt enough to avail themselves of a cheap market when it offers; but nations should never commit their people to the absurdity of relying upon any market because it is cheap. The policy of a nation cannot be changed with the productions of a market, but it is the business of individuals to watch the market and operate wherever advantage calls them. The United States cannot obtain her whole supply of iron from Great Britain in one quarter of the year, make it at home the next, and go abroad for it the next: nor can this be done if the quarters are extended to years, or to periods of five years.

It is worthy of remark, that while free trade theorists cry out *Laissez faire*, as summing up all the wisdom needed by governments in the management of trade, they stop the mouths of labourers, artisans and manufacturers, as not knowing, or not to be trusted with their own interests. Who are to be “let alone?”—the merchants. These agents, these buyers, transporters and sellers of the products of industry, ask, by their friends of the free trade philosophy, to have the whole business committed to them—to be *let alone*—while they exert every faculty, every nerve, and all the shrewdness, superior knowledge and address they possess, under the stimulus of all the selfishness

of human nature in the prospect of gain, for their own benefit. But let it be noted that the producers and the manufacturer do not cry "*let us alone*"—their cry in Europe for the last century and more has been for *protection*, and it has been accorded. Under this protection the products of Europe have increased at a rate fivefold the increase of population. But this *let us alone* policy is put forth only in behalf of the foreign merchants; the merchant of the domestic products unites with his special patrons. The foreign merchant, whose business represents but a tithe of the business of the country, asks to have the interest of the nine-tenths committed to him. This cannot be denied; let the manifestoes of free trade be examined, and it will be found that they mock at the manufacturer, scoff at his statements, complaints and petitions. It has been so for a century; yet the doctrine of protection has been in the main the policy of every modern civilized nation during that period, in which industry and the arts has made more progress in one century than in thousands of years before. It is true that, in England and in some other countries, some departments of industry have been so long and so fully protected that, with the advantage of cheap labour and cheap capital, they no longer require *protection*; and the persons interested in these branches of protection may now join in the cry of free trade, as they naturally wish to remove all obstacles to carrying their goods to all the markets of the world. These exceptions only prove their rule; they are exceptions only because the rule existed. Let manufacturers, small and great, then be heard, not only in their defence, but permit them to state what is required for their security and their success; let them be heard and regarded as representing the producing classes, the industry of the country.



The Plough, the Loom, and the Anvil.

VOL. II.

JUNE, 1850.

NO. XII.

THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

“IRELAND, the type of this *free-trade* system, has millions of acres of her richest lands as yet untouched, that would alone, if drained and cultivated, yield food in abundance for the whole population.” Is not this sentence alone, the truth of which will not be disputed, enough to excite the anxious attention of every American landholder; and to induce, not merely a readiness to read, but an impatience to understand the bearing of the two opposite systems—protection and free trade—on the value of that great machine to which, after all, men must look for individual comfort and national wealth—the mother and nurse of civilization and the arts? Assuredly no well-informed agriculturist, who properly appreciates the dependence of all other industries on the prosperity of his own, and who has the least perception of the liability of his pursuit to be improved or disparaged by the laws which regulate our commerce with foreign nations, will fail to appreciate his obligation to a writer who, without any personal interest in the matter, has gratuitously bestowed so much pains to elucidate a question which does not fall within the general range of the Farmer’s studies.

As to the pretended readiness of England to enter fairly and fully on a system of free trade with other nations, of all bare-faced impostures, it is one of the grossest to be found in the whole catalogue of humbugs with which men and nations have been swindled from the beginning of the world. The free trade she offers is in productions for which she has no resource, or manufactures in which a long system of monopoly and cheap oppressed labour have given her superiority. Of all countries on earth, the United States is that which can with most impunity enter on a *bona-fide* system of free trade after protection (which is the only road to it) shall have begotten competition and perfection in the use of our really vast resources, as unlimited in variety as in abundance. To consent to enter on such a competition with England now would be like pitting a man, in the very act of pulling off his coat, to fight a boxer already stripped to the skin.

With her very narrow geographical limits and meager internal resources, England under a genuine system of free trade would at once sink into comparative insignificance from that height of grandeur and power which has been built up on her monopoly of machinery and commerce. This monopoly she has only maintained by an accumulation of 800 millions of debt, starving thousands, that a few may riot in luxury. How long will the world submit to her colonial policy, for which, to maintain or to resist! fleets and armies—those bloody sores of civilization—are maintained over the whole world?

By the favour of our correspondent, we shall continue these expositions, until the effect of protection and free trade, on all branches of industry and on all interests of society, are made apparent to the plainest “common sense.”—*Editor P. L. and A.*

CHAPTER TWELFTH.

HOW PROTECTION AFFECTS THE LANDOWNER.

THE great saving fund is the land, and it is by the almost insensible contribution of labour that it acquires value. The first object of the poor cultivator of the thin soils is to obtain food and clothing for himself and his family. His leisure is given to the work of improvement. At one place he cuts a little drain, and at another he roots out a stump. At one moment he cuts fuel for his family, and thus clears his land, and at another digs

a well to facilitate the watering of his cattle, and thus keep his manure in the stable-yard. He knows that the machine will feed him better the more perfectly he fashions it, and that there is always place for his time and his labour to be expended with advantage to himself.

The land was given to man for his use, and the basis of the whole science of political economy is to be found in the law which governs his relation with this great and only machine of production. Mr. Ricardo taught that in the infancy of society men could command rich soils, from which they could obtain an abundant supply of food; but that with the growth of population food became more scarce, producing a necessity for dispersion in quest of those rich soils. The common sense of mankind teaches the contrary, and in this case, as in all others, the common sense of the many is right, while the uncommon sense of the few is wrong, as will be seen by all who will take the trouble to follow out the following sketch* of the gradual occupation of the earth:—

“The first cultivator commences his operations on the hill-side. Below him are lands upon which have been carried, by force of water, the richer portions of those above, as well as the leaves of trees, and the fallen trees themselves; all of which have there, from time immemorial, rotted and become incorporated with the earth, and thus have been produced soils fitted to yield the largest returns to labour: yet for this reason are they inaccessible. Their character exhibits itself in the enormous trees with which they are covered, and in their power of retaining the water necessary to aid the process of decomposition; but the poor settler wants the power either to clear them of their timber, or to drain them of the superfluous moisture. He begins on the hill-side; but at the next step we find him descending the hill, and obtaining larger returns to labour. He has more food for himself, and he has now the means of feeding a horse or an ox. Aided by the manure that is thus yielded to him by the better lands, we see him next retracing his steps, improving the hill-side, and compelling it to yield a return double that which he at first obtained. With each step down the hill he obtains still larger reward for his labour, and at each he returns, with increased power, to the cultivation of the original poor soil. He has now horses and oxen, and while by their aid he extracts from the new soils the manure that had accumulated for ages, he has also carts and wagons to carry it up the hill: and at each step his reward is increased, while his labours are lessened. He goes back to the sand and raises the marl, with which he covers the surface; or he returns to the clay and sinks into the limestone, by aid of which he doubles its product. He is all the time making a machine which feeds him while he makes it, and which increases in its powers the more he takes from it. At first it was worthless. It has fed and clothed him for years, and now it has a large value, and those who might desire to use it would pay him a large rent.

“The earth is a great machine, given to man to be fashioned to his purpose. The more he fashions it the better it feeds him, because each step is but preparatory to a new one more productive than the last; requiring less labour and yielding larger return. The labour of clearing is great, yet the return is small. The earth is covered with stumps, and filled with roots. With each year the roots decay and the ground becomes enriched, while the labour of ploughing is diminished. At length the stumps disappear, and the return is doubled, while the labour is less by one-half than at first. To forward this process the owner has done nothing but crop the ground: nature having done the rest. The aid he thus obtains from her yields him

* Originally published in my book. “The Past, the Present, and the Future.”

as much food as in the outset was obtained by the labour of felling and destroying the trees. This, however, is not all. The surplus thus yielded has given him means for improving the poorer lands by furnishing manure with which to enrich them, and thus he has trebled his original return without further labour; for that which he saves in working the new soils suffices to carry the manure to the old ones. He is obtaining a daily increased power over the various treasures of the earth.

“With every operation connected with the fashioning of the earth, the result is the same. The first step is, invariably, the most costly one, and the least productive. The first drain commences near the stream, where the labour is heaviest. It frees from water but a few acres. A little higher, the same quantity of labour, profiting by what has been already done, frees twice the number. Again the number is doubled, and now the most perfect system of thorough drainage may be established with less labour than was at first required for one of the most imperfect kind. To bring the line into connection with the clay, upon fifty acres, is lighter labour than was the clearing of a single one, yet the process doubles the return for each acre of the fifty. The man who wants a little fuel for his own use, expends much labour in opening the neighbouring vein of coal. To enlarge this, so as to double the product, is a work of comparatively small labour; as is the next enlargement, by which he is enabled to use a drift wagon, giving him a return fifty times greater than was obtained when he used only his arms, or a wheelbarrow. To sink a shaft to the first vein below the surface, and erect a steam-engine, are expensive operations; but these once accomplished every future step becomes more productive, while less costly. To sink to the next vein below and to tunnel to another, are trifles in comparison with the first, yet each furnishes a return equally large. The first line of railroad runs by houses and towns occupied by one or two hundred thousand persons. Half a dozen little branches, costing together far less labour than the first, bring into connexion with it three hundred thousand, or perhaps half a million. The trade increases, and a second track, a third, or a fourth, may be required. The original one facilitates the passage of the materials and the removal of obstructions, and three new ones may now be made with less labour than was required for the first.

“All labour thus expended in fashioning the great machine, is but the prelude to the application of further labour with still increased returns. With each such application wages rise, and hence it is that portions of the machine, as it exists, invariably exchange, when brought to market, for far less labour than they have cost. The man who cultivated the thin soils was happy to obtain a hundred bushels for his year’s work. With the progress of himself and his neighbour down the hill into the more fertile soils, wages have risen, and two hundred bushels are now required. His farm will yield a thousand bushels; but it requires the labour of four men, who must have two hundred bushels each, and the surplus is but two hundred bushels. At twenty years’ purchase this gives a capital of four thousand bushels, or the equivalent of twenty years’ wages; whereas it has cost, in the labour of himself, his sons, and his assistants, the equivalent of a hundred years of labour, or perhaps far more. During all this time, however, it has fed and clothed them all, and the farm has been produced by the insensible contributions made from year to year, unthought of and unfelt.

“It is now worth twenty years’ wages, because its owner has for years taken from it a thousand bushels annually; but when it had lain for centuries accumulating wealth, it was worth nothing. Such is the case with the earth everywhere. The more that is taken from it, the more there is left. When the coal mines of England were untouched, they were valueless.

Now their value is almost countless; yet the land contains abundant supplies for thousands of years. Iron ore, a century since, was a drug, and leases were granted at almost nominal rents. Now, such leases are deemed equivalent to the possession of large fortunes, notwithstanding the great quantities that have been removed, although the amount of ore now known to exist is probably fifty times greater than it was then.

"The earth is the sole producer. Man fashions and exchanges. A part of his labour is applied to the fashioning of the great machine, and this produces changes that are permanent. The drain, once cut, remains a drain; and the limestone, once reduced to lime, never again becomes limestone. It passes into the food of man and animals, and ever after takes its part in the same round with the clay with which it has been incorporated. The iron rusts and gradually passes into soil, to take its part with the clay and the lime. That portion of his labour gives him wages while preparing the machine for greater future production. That other portion which he expends on fashioning and exchanging *the products* of the machine, produces temporary results, and gives him wages alone. Whatever tends, therefore, to diminish the quantity of labour necessary for the fashioning and exchanging of the products, tends to increase the quantity that may be given to increasing the amount of products, and to preparing the great machine; and thus, while increasing the present return to labour, preparing for a future further increase.

"The first poor cultivator obtains a hundred bushels for his year's wages. To pound this between two stones requires twenty days of labour, and the work is not half done. Had he a mill in the neighbourhood he would have better flour, and he would have almost his whole twenty days to bestow upon his land. He pulls up his grain. Had he a scythe, he would have more time for the preparation of the machine of production. He loses his axe, and it requires days of himself and his horse on the road, to obtain another. His machine loses the time and the manure, both of which would have been saved, had the axe-maker been at hand. The real advantage derived from the mill and the scythe, and from the proximity of the axe-maker, consists simply in the power which they afford him to devote his labour more and more to the preparation of the great machine of production, and such is the case with all the machinery of preparation and exchange. The plough enables him to do as much in one day as with a spade he could do in five. He saves four days for drainage. The steam-engine drains as much as without it could be drained by thousands of days of labour. He has more leisure to marl or lime his land. The more he can extract from his machine the greater is its value, because every thing he takes is, by the very act of taking it, fashioned to aid further production. The machine, therefore, improves by use; whereas spades, and ploughs, and steam-engines, and all other of the machines used by man, are but the various forms into which he fashions parts of the great original machine, to disappear in the act of being used; as much so as food, though not so rapidly. The earth is the great labour savings' bank, and the value to man of all other machines is in the direct ratio of their tendency to aid him in increasing his deposits in the only bank whose dividends are perpetually increasing, while its capital is perpetually doubling. That it may continue for ever so to do, all that it asks is that it shall receive back the refuse of its produce, the manure; and that it may do so, the consumer and the producer must take their places by each other. That done, every change that is effected becomes permanent, and tends to facilitate other and greater changes. The whole business of the farmer consists in making and improving soils, and the earth

rewards him for his kindness by giving him more and more food the more attention he bestows upon her.

The solitary settler has to occupy the spots that, with his rude machinery, he *can* cultivate. Having neither horse nor cart, he carries home his crop upon his shoulders, as is now done in many parts of India. He carries a hide to the place of exchange, distant, perhaps, fifty miles, to obtain for it leather or shoes. Population increases, and roads are made. More fertile soils are cultivated. The store and the mill come nearer to him, and he obtains shoes and flour with the use of less machinery of exchange. He has more leisure for the preparation of his great machine, and the returns to labour increase. More people now obtain food from the same surface, and new places of exchange appear. The wool is, on the spot, converted into cloth, and he exchanges directly with the clothier. The saw-mill is at hand, and he exchanges with the sawyer. The tanner gives him leather for his hides, and the paper-maker gives him paper for his rags. With each of these changes he has more and more of both time and manure to devote to the preparation of the great food-making machine, and with each year the returns are larger. His *power to command* the use of the machinery of exchange increases, but his *necessity* therefor diminishes; for with each year there is an increasing tendency towards having the consumer placed side by side with the producer; and with each he can devote more and more of his time and mind to the business of fashioning the great instrument; and thus the increase of consuming population is essential to the progress of production.

"The loss from the use of machinery of exchange is in the ratio of the bulk of the article to be exchanged. Food stands first; fuel, next; stone for building, third; iron, fourth; cotton, fifth; and so on; diminishing until we come to laces and nutmegs. The raw material is that in the production of which the earth has most co-operated, and by the production of which the land is most improved; and the nearer the place of exchange or conversion can be brought to the place of production, the less is the loss in the process, and the greater the power of accumulating wealth for the production of further wealth.

"The man who raises food on his own land is building up the machine for doing so to more advantage in the following year. His neighbour, to whom it is *given*, on condition of sitting still, loses a year's work on his machine, and all he has gained is the pleasure of doing nothing. If he has employed himself and his horses and wagon in bringing it home, the same number of days that would have been required for raising it, he has misemployed his time, for his farm is unimproved. He has wasted labour and manure. As nobody, however, gives, it is obvious that the man who has a farm and obtains his food elsewhere, must pay for raising it, and pay also for transporting it; and that although he may have obtained as good wages in some other pursuit, his farm, instead of having been improved by a year's cultivation, is worse by a year's neglect; and that he is a poorer man than he would have been had he raised his own food.

"The article of next greatest bulk is fuel. While warming his house, he is clearing his land. He would lose by sitting idle, if his neighbour brought his fuel to him, and still more if he had to spend the same time in hauling it, because he would be wearing out his wagon and losing the manure. Were he to hire himself and his wagon to another for the same quantity of fuel he could have cut on his own property, he would be a loser, for his farm would be uncleared.

"If he take the stone from his own fields to build his house, he gains doubly. His house is built, and his land is cleared. If he sit still and let

his neighbour bring him stone, he loses, for his fields remain unfit for cultivation. If he work equally hard for a neighbour, and receive the same apparent wages, he is a loser by the fact that he has yet to remove the stones, and until they shall be removed he cannot cultivate his land.

“With every improvement in the machinery of exchange there is a diminution in the proportion which that machinery bears to the mass of production, because of the extraordinary increase of product consequent upon the increased power of applying labour to building up the great machine. It is a matter of daily observation that the demand for horses and men increases as railroads drive them from the turnpikes, and the reason is, that the farmer’s means of improving his land increase more rapidly than men and horses for his work. The man who has, thus far, sent to market his half-fed cattle, accompanied by horses and men to drive them, and wagons and horses loaded with hay or turnips with which to feed them on the road, and to fatten them when at market; now fattens them on the ground, and sends them by railroad ready for the slaughter-house. His use of the machinery of exchange is diminished nine-tenths. He keeps his men, his horses and his wagons, and the refuse of his hay or turnips, at home. The former are employed in ditching and draining, while the latter fertilizes the soil heretofore cultivated. His production doubles, and he accumulates rapidly, while the people around him have more to eat, more to spend in clothing, and accumulate more themselves. He wants labourers in the field, and they want clothes and houses. The shoemaker and the carpenter, finding that there exists a demand for their labour, now join the community, eating the food on the ground on which it is produced; and thus the machinery of exchange is improved, while the quantity required is diminished. The quantity of flour consumed on the spot induces the miller to come and eat his share, while preparing that of others. The labour of exchanging is diminished, and more is given to the land, and the lime is now turned up. *Tons* of turnips are obtained from the same surface that before gave *bushels* of rye. The quantity to be consumed increases faster than the population, and more mouths are needed on the spot, and next the woollen mill comes. The wool no longer requires wagons and horses, which now are turned to transporting coal, to enable the farmer to dispense with his woods, and to reduce to cultivation the fine soil that has, for centuries, produced nothing but timber. Production again increases, and the new wealth now takes the form of the cotton-mill; and, with every step in the progress, the farmer finds new demands on the great machine he has constructed, accompanied with increased power on his part to build it up higher and stronger, and to sink its foundations deeper. He now supplies beef and mutton, wheat, butter, eggs, poultry, cheese, and every other of the comforts and luxuries of life, for which the climate is suited; and from the same land which afforded, when his father or grandfather first commenced cultivation on the light soil of the hills, scarcely sufficient rye or barley to support life.”

If we undertake to study anywhere the cause of value in land, it will be found to result from diminution in the cost of transportation. The newspapers of the day, in speaking of the operations of the railroad recently constructed from Springfield (Illinois) to the Illinois river, tell us that

“One week before the railroad was finished, corn could be had here in any quantity, at 15 cents a bushel. Not a bushel can now,” says the Sangamon Journal, “be had for less than 25 cents. This,” it adds, “is the effect of the completion of the railroad on the price of one article of the products of our farmers.”

The first thing to be paid by land is transportation. When that is so great as to eat up the whole proceeds, the land will remain uncultivated.

Diminish the cost of transportation so as to leave sufficient to pay the wages of labour, and it will be cultivated, but it will pay no rent. Diminish it further, so as to leave a surplus over and above the reward of the labourer, and the land itself will acquire value. Diminish it still further, by removing altogether the necessity for transportation, making a market on the land for all the products of the land, enabling the farmer readily to return to it all the refuse of its products, and it will acquire the highest value of which land is capable. The commodity of which the government and people of the Union have most to sell is land. In quantity it is practically unlimited, and long before our present territory shall have been even laid out for sale, vast countries will have been brought within the limits of the Union. In quality it is entitled to stand first in the world. The area of the coal region is 133,000 square miles. Iron ore is everywhere, untouched. Copper, zinc, and almost all other metals abound. South Carolina has millions of acres of the finest meadow-land unoccupied, and she has lime and iron ore in unlimited abundance. Virginia is in a similar condition, and yet people are leaving both, when population is all that is needed to place them in the first rank among the States of the Union in point of wealth. Of the three States of Alabama, Louisiana, and Mississippi, with advantages unrivalled for the production of the great clothing material of the world, two-thirds of their whole surface, or 83,000,000 of acres, yet remain unsold. The land at the command of the government counts by hundreds of millions, and to give to all this value we need only population.

In Europe, on the contrary, population is held to be superabundant. Marriage is regarded as a luxury, not to be indulged in, lest it should result in increase of numbers. "Every one," it is said, "has a right to live," but this being granted, it is added that "no one has a right to bring creatures into life to be supported by other people."* Poor laws are denounced, as tending to promote increase of population—as a machine for supporting those who do not work "out of the earnings of those who do."† No man, it is thought, has "a right" to claim to have a seat at the great table provided by the Creator for all mankind, or that "if he is willing to work he must be fed." Labour is held to be a mere "commodity," and if the labourer cannot sell it, he has no "right" but to starve—himself, his wife, and his children. "The particular tendency to error apparent in the prevalent social philosophy of the day," to which it is deemed necessary to direct special attention, is "the unsound, exaggerated, and somewhat maudlin tenderness with which it is now the fashion to regard paupers and criminals."‡ Such are the doctrines of the free-trade school of England, in which Political Economy is held to be limited to an examination of the laws which regulate the production of wealth, without reference to either morals or intellect. Under such teaching it is matter of small surprise that pauperism and crime increase at a rate so rapid.§

Throughout Europe, men are held in low esteem. They are considered to be surplus, and the sooner they can be expelled the better it will be for those who can afford to remain behind. To accomplish this object, Colonization Societies are formed, and Parliament is memorialized by men who desire to export their fellow-men by hundreds of thousands annually. Whig and Tory journals|| unite in urging the necessity for expelling man from the

* J. S. Mill's *Principles of Political Economy*.

† *Edinburgh Review*, October, 1849.

‡ *Ibid*.

§ See article on *Transportation*, *Blackwood's Magazine*, November, 1849.

|| The number of *Blackwood's Magazine*, just received, advocates the application of £300,000 per annum to this object.

land of Britain. Secretaries of State furnish ingenious calculations as to the amount required for accomplishing the work of expulsion. On all hands, it is agreed that men are too numerous, and that their numbers grow too fast, and yet there is not a country in Europe that can justly complain of over-population. Ireland, the type of this *free-trade* system, has millions of acres of her richest lands as yet untouched, that would alone, if drained, yield food in abundance for the whole population.

It is not, however, the labourer alone that stands in need of aid. The condition of the land-owner is little better. This system of universal discord is thus described in one of the journals of the day:

"The state of the country is frightful. The assassinations are computed at more than ten per week, half a hundred per month, which, added to the systematic starvation of almost another hundred, in the same time, gives a state of things without parallel in modern civilization. With this diminution of the people, the million of work-house inmates and dependents increases. In less than a month it will be more than a proprietor's life is worth to be seen by his tenantry. Rents, which of course are nominal in collection, have, therefore, lately sunk to the fourth of their nominal amount. Lands, let hitherto at £2 10s. per acre, are offered at less than 15s; and such is the exasperation of the starving millions, that the landlords are afraid further to aggravate their sufferings."

The Parliament of England is now engaged in passing laws to transfer, for the fourth time in little more than two centuries, the mass of Irish property to English undertakers. The little cultivator of land has been ruined. Labour has become utterly valueless, although labour alone is needed to bring into cultivation 7,000,000 of acres of the richest soils in the world, now unproductive.

The land-owner of India has been ruined. The immense body of village proprietors that but half a century since existed in that country, helping and governing themselves, has disappeared.

The land-owner of the West Indies—of Demerara and Berbice—has been ruined, and the condition of the labourers has not been improved.

The land-owner of Portugal—the continental colony of Great Britain—has been ruined, and with diminished value of land there has been steady deterioration of civilization, until the name of Portugal has become almost synonymous with weakness and barbarism.

If we look to Canada, Nova Scotia, or New Brunswick, the same picture meets our view. "Land of the same quality, at one minute north of the imaginary line dividing the provinces from the Union, is worth less than half as much as that which is one minute south of it. Lord Durham, in his report, made but a few years since, says that "land in Vermont and New Hampshire, close to the line, is five dollars per acre, and in the adjoining British townships, only one dollar," and that on the northern side of the line, with superior fertility, it is "wholly unsaleable even at such low prices." Canada has no market on the land for the products of the land, and the cost of transportation eats up the product, much of which is absolutely wasted because it cannot go at all to market. The labour of men, women, and children, and that of wagons and horses, is everywhere being wasted, and therefore it is that the Canadian desires a change of government that will enable him to obtain a protective tariff. Give him that—annex him to the Union—and his land will acquire value similar to that of the Union. Farmers will then grow rich, and labourers will grow rich, and the power to consume cloth and iron will grow with the same rapidity with which it recently grew with us.

Every colony of England would gladly separate from her, feeling that connection with her is synonymous with deterioration of condition. Every one would gladly unite its fortunes with those of our Union, feeling that

connection with us is synonymous with improvement. The reason for all this is, that the English system is based upon cheap labour, and tends to depress the many for the benefit of the few. In our system, it is the many who govern; and experience having taught them that prosperity and free trade with England are inconsistent with each other, we have "free trade" tariffs with protective duties of thirty per cent., and likely to be increased. The colonies are ruined by free trade, and they desire annexation, that they may have protection.

This idea of cheap labour is universal among English colonists. It is found in all their books. If they fail to succeed, it is because labour is "too high." They are willing to receive convicts, because they can be had "cheap." They tell their correspondents that men may be had from the Continent who will work for small wages, while Englishmen must have large ones, *i. e.* enough to feed and clothe themselves comfortably. They emancipate the negroes, and then they find their labour "too dear," and send to India, or to the coast of Africa, for "cheap" labourers. The *Times* informs us that the great works of England are based upon an ample supply of "cheap labour." The whole system looks to the degradation of the labourer, by requiring him to underwork and supplant the labourer of other countries, with all the disadvantage of distance and heavy cost of transportation. Protection looks to raising the value of labour, and thus promoting the annexation of individuals, and the establishment of perfect free trade between ourselves and the people of Europe by inducing them to transfer themselves to our shores. It is a bounty on the importation of the machine we need—man—to give value to the machine we have in such abundance—land. It leads to perfect free trade—the annexation of nations—by raising the value of man throughout the world.

It has been, at times, matter of surprise that the hundreds of thousands who have arrived in this country have been so instantly absorbed that their presence has been unfelt, and that the more we received, the larger was the quantity of food, fuel, cloth, and iron given in exchange for labour, but such is the natural result of a system which tends to enable the miner and the worker in iron, the spinner and the weaver, to combine their exertions with those of the farmer and planter. Had the policy of 1828 remained unchanged, and were we now receiving a million of men, the only effect that would be observed, would be that wages and profits, and the power of labourer, landowner, and capitalist, to command the good things of life would be steadily increasing, and with each step forward the tendency to immigration and to increase in the value of land would grow with accelerated pace. We need population.

In the thorough adoption of this course by the people of the Union, is to be found the remedy of the ills of both the land-owners and the labourers of the rest of the world, and the removal of the discords now so universal. That we may clearly see how it would contribute towards producing harmony, we must first inquire into the causes of discord.

The labourers of the world have one common interest, and that is that labour should become everywhere productive and valuable. The more wheat produced in return to a given quantity of labour, the more of it will the shoemaker obtain for his work, and the more advantageously the shoemaker can apply his labour, the more readily will the farmer provide himself and his family with shoes. Such, likewise, is the case with nations. It is to the interest of all that labour in all should become productive, and if the labour of the cotton-growing nation become unproductive, that of the sugar or wheat-growing nation feels the effect in an increased difficulty of obtaining clothing.

The land-owners of the world have one common interest, and that is, that land should everywhere become productive and valuable. It does so become with every increase in the skill and intelligence of the labourer, as may be seen by a comparison of times present with times past in every improving country, or by a comparison of the various countries of the world at the present moment. In Russia land itself has little value. In Belgium, where cultivation is carried on with intelligence elsewhere unknown, it has great value.

Every increase in the facility of obtaining cloth for food, or food for cotton, diminishes the quantity of labour to be given for food or clothing, and enables the producer to obtain other commodities and things needed for the improvement of his mind, or which tend to enable him more advantageously to apply his labour. The landed proprietor of England is therefore directly interested in the improvement of the mode of cultivating cotton in the United States, because it tends to improve the condition of the man who labours on his land; and the cotton-grower is interested in the improvement of the wheat-grower of Russia, because the latter is thereby enabled to purchase more clothing.

Among the land-owners and labourers of the world there is, therefore, perfect harmony of interests. Between them stand the men employed in the work of transportation, conversion and exchange—ship-owners, manufacturers, and merchants.

The object had in view in the prohibition of manufactures in the colonies was that of compelling the colonists to use ships that they would not otherwise require, and to pay manufacturers and merchants for doing for them those things that they could have better done themselves. The necessary consequence of this was discord, which in our case led to war, and vast waste of time and money. Another consequence was, that the people engaged in the work of transportation, conversion, and exchange, increased more rapidly than the producers, and England, from having food to sell, became a purchaser of foreign food. Next came the corn-laws, by which the importation of food was to be prevented, for the benefit of land-owners, and other laws prohibiting the export of machinery, for the benefit of the owners of ships and machinery of various kinds. By the one the owners of land were enabled to tax the labourer and the mechanic, and by the other the mechanic was enabled to tax the world in return. The effect has been that of preventing the application of English labour and capital to the work of production, and driving it into the far less profitable work of transportation, conversion, and exchange, to such an extent that the converters have at length become masters of the land-owners, and have abolished restrictions on the import of food which the latter had established for their protection, and as revolutions never go backward, we may fairly conclude that the corn-laws will not be re-established. The result, thus far, has been to ruin the landholders of Ireland, and the next result must be to ruin those of England, if the system be allowed fair play.

The people of Russia, we are assured, have been compelled to waste food for want of a market. Rather than do this, they would give a bushel of wheat for a yard of cloth. That they cannot afford to do this, we are assured; but what else can they do? If they cannot make cloth they must buy it, and they must give an equivalent, and if that be even bushels for yards, they must give them. Until Russia can make a market for this now surplus food, it will seek a market at any price, and the price in England cannot much exceed the cost of transportation between the farm on which it was produced and the town at which it is consumed. Nearly the whole of that price must go to the exchanger, to the loss of both land and labour,

both of which must tend towards the Russian level, now a very low one, because of the absence of a market on the land for the products of the land.

The object of the now dominant class in England is that of bringing about free trade with the world. Such a measure adopted by this country would close every furnace and rolling-mill, and every cotton and woollen factory in the country, and would diminish the value of both labour and land, by compelling the producer of food to seek a market in England. Similar measures adopted by the *Zoll-verein*, would compel the people of Germany to do the same, attended with similar results. The market of England would be borne down with the weight, and the price would fall so low as utterly to destroy the power of the labourer on land to pay rent for its use, and the power of the owner to improve it. The class intermediate between the producers in various parts of the world, would daily grow in numbers and strength, and the productiveness of labour and land would daily diminish, with steady diminution in the value of both.

On the other hand, let us suppose the people of the Union, of Russia, and of Germany, to adopt such measures as would enable them to consume on the land the whole of the food produced upon the land, and thus to put a stop to the enormous imports by which the English agriculturist is now being crushed. The immediate effect would be that the labour and land of all those countries would rise in value, and therewith there would be an increase in the value of both in England. The demand for labour here would speedily drain off the surplus hands employed in factory labour, and the increased demand for home-grown food would induce the application of labour and capital to production,* and the value of both would rise. Consumption would increase as labour became more productive, and the power of the producers would be restored, while that of the mere exchangers would be diminished.

To the improvement of the condition of labour and land in the United Kingdom the abolition of the colonial system is essential. Its maintenance involves the payment of taxes to an amount that is terrific, *all of which must be paid by the producers and those who own the machine of production, abroad or at home.* The tax that is nominally paid by the man who sells the wheat, or by him who transports it, is really paid by the man who produces it, and by him that consumes it. Three-fourths of the nation are engaged in the work of transporting, converting, or exchanging the products of others, adding nothing whatever to the quantity produced, while living out of it, and thus deteriorating the condition of the land-owners and labourers of England and of the world.

The land-owners of England have been the legislators of England. They made the system which produced our revolution—that which has depopulated India, and must ruin every country subjected to it—and they are now paying the penalty. Each step towards the degradation of the people by whom they were surrounded has been attended by loss of power in themselves. Their policy has converted the little occupant into the hired labourer, and the labourers on land into the tenants of lanes and alleys in Liverpool† and Manchester. Throughout much of Scotland they have substituted sheep for the men whom they have driven to take refuge in Glasgow, and with each such step they have weakened themselves, converting

* At a recent meeting in London, Dr. Buckland asserted that the product of all the clay lands of England might be doubled by a moderate expenditure for drainage.

† The greatest crowding of population in a neighbourhood is in a district in Liverpool, England, containing a population of 8000 on 49,000 square yards of ground, being in the proportion of 657,963 to a square mile.

those who were their own support into the tools of those who live at the cost of both. The exchanger has set his foot upon their necks. *Commerce is King*. They are prostrate, and so they must remain until they shall have help from abroad. Their natural allies are the land-owners of the rest of the world. The East India Company, as the great land-owner of India, is greatly interested. That country is becoming daily less and less able to pay taxes, and the power so to do must diminish with the continuance of the system. Were the machinery now employed in converting cotton into cloth for India employed in making cloth in India, thus making a market on the land for its products, the culture of cotton would revive, the demand for food would increase, population would grow, and jungle would be cleared, and the Company might then obtain a constantly increasing rent from taxes constantly decreasing in their weight, paid by a people constantly improving in condition. The price of labour would rise, and the necessity for armies would diminish, and the Company might then, at no distant period, sell out its establishments to a people who would thereafter govern themselves.

It is to the people of the United States, however, that they must chiefly look for help. Owners already of the chief part of North America, they are likely soon to own the whole. The *national*, not party or sectional, adoption of the protective policy would at once raise the value of land throughout the Union, because it would then be felt that a market would everywhere be made on the land for the products of the land. The British provinces would then speedily be incorporated into the Union, and the supply of food to British markets would cease; Cuba and Mexico would follow, and thus would be made a market for the population of all Southern Europe; and with each such step the value of labour would rise, followed by a necessity, on the part of the landholders everywhere, for an effort to retain their rent-payers, if they would preserve the value of their land. Spain and Italy would become manufacturers for themselves, and thus the colonial system would gradually pass out, and with it the power of the exchangers over the labourers and land-owners.

It is not by immigration alone that the population of the Union would be augmented, and increased value given to the land which so much abounds. The present system degrades the country to build up great cities, to become the resort of tens of thousands who would have remained at home among parents and friends, had furnaces, rolling-mills, cotton or woollen mills afforded them employment for time and mind. The same cause compels another portion to fly to the West; and while, in the one case, we have the poverty, vice, and disease of crowded cities, in the other we have those of scattered population; and men, women, and children starve in New York, while other men, women, and children perish of fevers incident to the occupation of new countries in advance of the arrangements that would have resulted from the more gradual extension of the area of settlement. It will be said that here is discord. If the city population did not grow, what would become of the owners of city lots? The harmony of interests is here, as everywhere else, perfect. Towns and cities would grow more rapidly than ever, but they would grow more healthfully, preserving a nearer relation to the population of the country, whose trade they desired to perform. New York would cease to be, as now, a great wen, absorbing all the profits of hundreds of thousands of the poor farmers, her customers, who give ten days' labour employed in raising corn for the labour of one day employed in producing British iron. The country and the city would grow together, and the jealousy of the country towards the city would speedily pass away.

The people of China constitute a world of themselves. They have little

intercourse with the exterior world, nor is the example of Hindostan likely to produce any desire for its extension: certainly not, while they shall continue to recollect that their desire to prohibit the importation of opium involved them in a war that resulted in the destruction of cities and the ruin of hundreds of thousands of innocent people. The system of that country is directly the reverse of ours, in the fact that the government is in the hands of one, while here it is in the hands of all. In this, it labours under infinite disadvantage, yet the spectacle there presented of the results of combined action puts to shame our boasted civilization. A recent writer thus describes the condition of the people:—

“The farms are small, each consisting of from one to four or five acres, indeed, every cottager has his own little tea garden, the produce of which supplies the wants of his family, and the surplus brings him in a few dollars, which are spent on the other necessities of life. The same system is practised in every thing relating to Chinese agriculture. The cotton, silk, and rice farms, are generally all small, and managed upon the same plan. There are few sights more pleasing than a Chinese family in the interior engaged in gathering the tea-leaves, or, indeed, in any of their other agricultural pursuits. There is the old man, it may be the grandfather, or even the great-grandfather, patriarch-like directing his descendants, many of whom are in their youth and prime, while others are in their childhood, in the labours of the field. He stands in the midst of them, bowed down with age. But, to the honour of the Chinese as a nation, he is always looked up to by all with pride and affection, and his old age and gray hairs are honoured, revered and loved. When, after the labours of the day are over, they return to their humble and happy homes, their fare consists chiefly of rice, fish and vegetables, which they enjoy with great zest, and are happy and contented. I really believe there is no country in the world where the agricultural population are better off than they are in the north of China. Labour with them is pleasure, for its fruits are eaten by themselves, and the rod of the oppressor is unfelt and unknown.”*

Let this be compared with the results of the system that has desolated Ireland and India, and that drives our people to Oregon and California, while men are everywhere, among ourselves, half-cultivating large farms, when they might obtain treble the result from half the surface, and let it then be determined which is the one that tends most to promote the prosperity and happiness of the labourer, and to improve the condition of the owner of land.

The policy of England tending to dispersion, she desires to facilitate the making of roads by which all the commodities of the world may be brought to her, thence to be returned to the places from whence they came, retaining so large a portion as to cause the destruction of the land and its owner. Lower India is utterly exhausted, and England desires railroads to more distant points, which will be then exhausted in their turn. From 1834 to 1840 she lent us iron to make roads in new countries, and we were ruined by dispersion. From 1843 to 1847, we filled up the spaces, the policy being that of concentration, and we grew rich. The present policy is that of dispersion. It is proposed to make a railroad to the Pacific, that men may scatter themselves more widely, although we now occupy a space that would be sufficient for almost the population of the world, if properly cultivated. The more roads we make in the now-settled States, the richer and stronger we shall grow, and the greater will be the value of land. The more roads we make in yet unsettled lands, the poorer and weaker we shall grow, and the less will be the value of land. It behooves the farmer, then, to look carefully to every scheme for promoting dispersion.

The value of labour and of capital is dependent on the quantity of both that can be given to the work of production. Every increase in the quan-

* Fortune's Wanderings in China.

tity of either required to be given to the work of conversion and transportation, tends to diminish the value of all. Every diminution in the quantity tends to increase the value of all. The nearer the consumer and the producer can be brought together, the greater is the quantity of capital and labour that can be given to the work of production, the smaller is that which is required for transportation, and the more rapid is the advance in the value of both labour and land.

We are now separating the consumer from the producer, and the consequence is, that five per cent. stocks are at par, land is cheap, and wages are low. Were the tariff of 1842 re-enacted, interest would rise to six per cent. and labour would command a large return—the consequence of which would be a great increase in the consumption of food, and wool, and cotton, and the value of land would rise.

The annexation of a million of people, emigrants from Europe, to our community, establishes free trade with them. The annexation of the land and the people of Canada, and the other British possessions, would enlarge the domain of perfect free trade. So would that of Cuba, Mexico, Ireland, or even England,* and free trade thus established would be beneficial to all, the annexers and the annexed.

The people of the north would not object to the annexation of Canada, although such a measure could profit them but little. They and the Canadians are both sellers of food, and it is the superior value of wheat and flour on the south side of the line by which they are divided that induces the Canadians to desire to be brought within the Union. The people of the South would oppose the admission of Canada, although the effect of such a measure would be to convert the Canadians into large customers, instead of permitting them to remain small ones.† Once within the Union, the consumption of cotton in the British provinces would speedily rise from 20,000,000 of yards, weighing 5,000,000 of pounds, to 30,000,000 of pounds, and thus would the planter gain a market for 50,000 bales of cotton. The material interests of the South would be promoted by the annexation of Canada, yet would the South oppose the measure on the ground of supposed danger to political interests.

The South would advocate the admission of Cuba into the Union, although the effect of such a measure would, under existing circumstances, be that of ruining the cultivation of sugar, the only resource to which the planter now can look with hope—the only one that has enabled him to bear up under the late and present hopeless condition of the cotton culture. The man of the north would oppose the measure, although it would give him sugar at a cost far below the present one, and a market for grain and cloth that would absorb of both to a vast amount. Political interests are thus at variance with material ones. In both cases the discord is but apparent, while the harmony is real. The establishment of that real freedom of trade which results from the immigration of individuals, or from the annexation of communities, can never fail to be productive of benefit to all.

The cotton planter, as we have seen, now sells his product in the cheap-

* Ireland and England are mentioned here only to show that the difficulty of having perfect free trade with them would be removed by the change in the value of labour that would result from change of their political system.

† Export to British North America in the first six months of

	1846.	1847.	1848.	1849.
Plain calicoes .	7,483,318	7,339,686	6,745,536	5,979,991
Printed " .	8,483,163	6,497,845	4,589,811	5,701,857
	16,966,481	13,837,531	11,335,347	11,681,848

est market and buys his cloth and iron in the dearest one. He gives away the one, and is then unable to buy the other. By changing his system, and compelling the loom to come to the cotton, and the anvil to come to the food, he will sell his cotton and obtain his cloth and iron in exchange for labour that is now being wasted. He will then export cloth to all the world, and the necessity for resorting to the cultivation of sugar will cease. The people of the North will then consume all the sugar that Cuba can produce, and those of Cuba will require pounds of cotton where now they consume but ounces.*

CHAPTER THIRTEENTH.

HOW PROTECTION AFFECTS THE MANUFACTURER.

THE shipowner stands between the producer of cotton and his customers, and the larger proportion the quantity to be transported bears to the number of ships to do the work, the higher will be freights. We might thence suppose that his interest would be promoted by the pursuance of a course that would compel the cotton to go to the loom, and that he would be injured by the adoption of one requiring the loom to come to the cotton. Directly the reverse, however, as we have seen, is the fact. The more the loom can be made to come to the cotton, the more valuable are the services of men, the greater the number of men to be imported, the larger the number of commodities that can be exported, and the larger the business for ships.

The manufacturer, in like manner, stands between the producer and the consumer of cotton, and the larger the quantity of cotton to be converted compared with the machinery of conversion, the larger will be his charge for the use of his machinery. It might, therefore, be supposed that he would be injured by the adoption of measures tending to place the loom in the cotton-fields of the South, or on the coal-fields of the West, but the reverse is the fact. The more people make coarse cloth in the South and West, the more will there be to require fine cloth and silks from the East, and the greater the demand for labour in the one, the greater will be the requisitions made upon the other for the skill they have already acquired, with a constant increase of wages, and equally constant increase in the power of consuming food, cloth, and iron. The more they can make their exchanges at home, with men whose labour is valuable, the larger will be the equivalent received for their own labour; and the more rapid the increase in the value of that of others, the greater will be the value of their own. Every measure tending to break down the monopoly of machinery tends to increase the value of man throughout the world, and none could have that effect to such an extent as would the transfer of the machinery of Lowell to the cotton-fields, to be replaced by other machinery of a higher order.

But, it will be said, "The people of the South need no further protection than they now have. They are satisfied with 30 per cent., and why, if they can go on to manufacture without any increase of duty, should they impose higher duties on fine cloths and silks, for the benefit of the North and East? We know that the latter cannot make fine muslins at the present rate of duty—nor can they manufacture silk goods in competition with France. The South will work up its cotton and make its own exchanges, leaving the duty as it stands, and then Lowell, Lawrence, and Providence must go down, for competition is impossible." Such are the views perpetually promulgated by journals whose editors profess great acquaintance with political

* The export from Great Britain to all the foreign West India Islands is but little over 20,000,000 of yards.

economy, and whose speculations are received as authority by their readers. Nothing, however, could be less in accordance with the true interests of the planters.

The larger the quantity of the machinery prepared for the conversion of cotton into cloth, the smaller will be the charge for its use. The planter requires to rid himself of a *monopoly* that limits the increase of that machinery, and compels him to give to the owners of the little that exists, whether English or American, a share of the product entirely disproportioned to its value as compared with that of the machinery required for producing his cotton. To break down one monopoly and establish another would not answer his purpose, and yet such would be the result at which he would arrive were he to pursue a course that would merely substitute Augusta for Lowell, or Graniteville for Lawrence. The man of the South would, and necessarily, do as he of the North now does, buy his cotton at the market price, *as fixed in England*, and sell his goods at the market price, *as fixed in England*, for until the quantity of machinery shall be so far increased as to prevent the accumulation of large stocks in England, the price must continue to be there fixed for the world; and so long as we shall continue to be *compelled* to go there for any portion of our supplies of cloth, the price of the whole will continue to be fixed by the cost of obtaining the last small portion. What the planter needs is that the price shall be fixed here, for both cotton and cloth, and that it may be so, he requires an *increase* of the quantity of machinery ready to do his work, and not the mere substitution of that of Southern men for that of Northern men.

How indispensably necessary it is that they should do so will be obvious from an examination of the diagram given at page 75. It is there shown how enormous are the charges of the manufacturers when the quantity for cotton requiring to be converted bears a large proportion to the machinery for converting it. In the following table are given,

First. The amount of the crop.

Second. The prices of cotton in Liverpool, by which those of the rest of the world are settled. The dates taken are March, 1844, July, 1845, May, 1846, and June, 1847.

Third. The price of best mule twist, No. 2 per pound, at the same periods of time.

Fourth. The price the whole crop, allowing twelve per cent. for waste, would yield, if converted into this description of yarn.

Fifth. The yield to the planter, supposing the whole crop so sold, from which are to be deducted all the freights, charges, &c., between his plantation and Liverpool.

Sixth. The amount retained by the manufacturer as his charge for converting cotton-wool into yarn.

Year.	Crop.	Price.	Price of twist.	Amount of twist.	Price of crop.	Charge for conversion.
1843-4	815,000,000	6d.	10½d.	£31,000,000	£20,000,000	£11,000,000
1844-5	958,000,000	4	11½	41,000,000	16,000,000	25,000,000
1845-6	840,000,000	4¾	9¾	30,000,000	16,500,000	13,500,000
1846-7	711,000,000	7	10½	27,500,000	20,700,000	6,800,000

If we deduct from the crop of 1846-7, the comparatively small sum required for the payment of freight, charges, &c., and from that of 1844-5, the large sum required for the same purposes, it will be seen how insignificant is the return to the planter for a large crop compared with what he receives for a small one.

In 1847, the manufacturer gave 7d. and sold at an advance of about fifty per cent.—*i. e.* he charged half as much for converting the wool into yarn

as he paid for the wool itself. In 1845, when he paid 4*d.* he sold at nearly a shilling—*i. e.*, he charged twice as much for the work of twisting the wool as he paid for the wool. He was enabled to do this, because of two reasons:—First, the machinery of conversion was disproportioned to the quantity of cotton to be converted; and second, the market for cotton goods was extending itself, because the world was comparatively peaceful, and labour was being applied more productively than usual. The effect of the change that has since occurred will be seen from the following view of the operations of 1848.

Crop.	Price.	Price of yarn.	Amount of yarn.	Amount of crop.	Charge for conversion.
1847-8 940,000,000	4 <i>d.</i>	8 <i>d.</i>	£28,000,000	£15,600,000	£12,400,000

The machinery had been increased, but the market was gone. Wars, revolutions, and threats of war and revolution, had destroyed it. The planter had 4*d.* per pound, of which a large portion was swallowed up in the cost of transportation; and the manufacturer obtained as much for twisting the wool into yarn as the planter received for raising, ginning and baling it, and for transporting it, first to the place of shipment, and thence to Liverpool, together with all the charges of the numerous persons through whose hands it passed on its way.

The planter needs machinery adequate to the conversion of his crop, and also a market for it when converted. The failure of either is equally fatal to him.

The first he cannot have under the monopoly system. It is one of mere gambling; and while a few make fortunes, the many are ruined. The distant few, already wealthy—the cotton-lords of England—are not the men to whom he must look to provide him with it. It is to himself, and the many like himself, at home. Fuel and iron ore abound in the South, and cotton fields furnish cheap sites for the erection of acres of factory, in which the product of thousands of acres of cotton could be converted by aid of the labour that is now wasted—the coal and the iron ore whose powers remain unused—the water powers that remain unimproved. By their aid, every pound of cotton now produced in the South, not required by Great Britain and others for their own immediate consumption, could be converted into yarn or cloth, and cheaply furnished to the world. The planter would then receive a yard of cloth for a pound and a half of cotton, instead of giving five pounds for one.

The difference between the price of the crop of cotton, *in Liverpool*, and the price of yarn, *also in Liverpool*, in 1844-5, would have exceeded a hundred millions of dollars, being twice the amount* that it would cost to place in the cotton fields of the South spindles for converting into yarn the whole crop that is now sent without the limits of the Union.

He would then have yarn or cloth to sell instead of cotton, and then his crop would speedily rise to five millions of bales, for the labour and manure now wasted on the road would go upon the land. Capital now absorbed by brokers, ship-owners, and distant manufacturers, would be applied to the making of railroads, the improvement of the machinery of cultivation, the diffusion of knowledge, and in a thousand other ways tending to render labour more productive. Where, however, is he to find a market for his products, thus increased?

Commerce is but an exchange of equivalents; and if the supply of iron, silk, coffee, tea, and other commodities required by the planter, do not keep pace with increase in the supply of cotton, he will be constantly giving

* See Plough, Loom, and Anvil, No. XIX., page 421.

more cotton for less iron or silk, and thus others will enjoy the whole advantage resulting from his increased exertion. That the advantage may, as justly it should, be his, it is necessary that the production of the commodities that he desires *to receive* in exchange go on to increase in a manner correspondent with that which he desires *to give*. If it does so, he gives labour for labour. If it does not, he gives more labour for less labour.

The question now arises: Can the production of the world, under the existing system, go on to increase in such a manner as to give to the planter a proper equivalent for his production? The answer is to be found in the fact, that it has already failed to do so, and that he is even now obliged to abandon cotton for wheat and sugar. How, then, can it be expected to do so in future? The average crop must speedily reach 3,000,000 of bales; and, when it shall have done so, his condition will be worse than at present. The production of the world does not increase correspondingly with our own; and until it can be made so to do, we must work at disadvantage, giving much labour for little labour.

With all its immense mass of rich and unimproved land, the United Kingdom produces little. It does not even feed itself. It has a little iron and coal to sell, but a demand for an extra hundred thousand tons of the former would greatly increase the price of the whole without producing any material increase in the demand for cotton; for the rich iron-master would be made richer, while the poor miner would remain as poor as now. Great Britain has scarcely any thing to sell but *services*—not products. To her we cannot look for a market.

Of the people of France, almost half a million of those most capable of working employ themselves in carrying muskets, and a large portion of the labour of the rest is employed in raising food for them and other non-producers, in making clothing for them to wear, and powder for them to burn. They have, therefore, few products to sell, and, like Great Britain, they have little to offer in exchange but services.

The people of Italy and India raise some silk, but the chief part of both are otherwise occupied than in labours of production; and so are they like to be, and they cannot increase their product to keep pace with ours. Germany maintains large armies, and produces little to sell. So it is with Spain and Portugal. Mexico has a little silver and cochineal: but the quantity does not grow, nor is it likely so to do. Look where we may, the power of production is not only small, but incapable of increase under existing circumstances, and unless a change can be effected, we cannot find markets for the products of our constantly increasing population. What is the remedy? It is to bring the people to the place where *alone* their labour can be made productive, and thus establish perfect free trade with them.

Fifty thousand English miners and furnace men distributed among the coal and iron-ore fields of Pennsylvania, Ohio, Indiana, Tennessee and Alabama, would produce 600,000 tons of bar iron, to be exchanged with the farmer for his wheat, and the planter for his cotton, and the latter would then obtain a ton of the one for a bale of the other, instead of giving two or three for one. He could then make roads to go to market, and the labour of his people would become valuable, and they would consume five times the cloth they now consume, and thus would be made a double market for his cotton.

The same number of Italians would raise quadruple the silk we now consume, and they would be large consumers of food and cotton. Were the market for silk once made here, we should in a little time raise as much as all the world beside, and consume almost all we raised.

The planter and the farmer *must* make a market on the land for the

products of the land, by bringing here the people they desire to employ in the production of the commodities they require to consume; or they *must* continue to give a continually increasing quantity of labour for a continually decreasing one. By adopting the first course, they would convert the consumers of one pound into consumers of twenty pounds, and the consumers of twenty pounds into consumers of forty pounds. By adopting the opposite policy—that now called free trade—they will convert consumers of twenty pounds into consumers of one.

Were it now known in Europe that such was the *fixed and unalterable policy of the nation*, the present year would see the transfer of population to the extent of half a million of persons, and of capital, in the form of machinery, to an incalculable extent; and once here, here they would stay, increasing at once, and immensely, the market for both food and cotton. Five years would scarcely elapse before it would reach a million; for with every year the power to obtain food, clothing, and the machinery for profitably applying labour, would increase, offering new inducements for the transfer of both labour and capital. With each year, the desire of our neighbours, north and south, to enter the Union would increase, and but few would elapse before it would embrace all North America, and a population of forty or fifty millions of people, themselves consuming far more than all the cotton we now raise. The Canadian, in the Union, would find his labours trebly profitable, for he would obtain treble the iron and cloth in return for less exertion. The mines of Nova Scotia and New Brunswick would give forth their treasures in return to the labour of men who now can consume but little food or clothing, but would then have power to consume much. The mines of Mexico would be made to yield three dollars, where now they yield but one; and all would obtain silver, gold, iron, lead, cloth, and all other of the necessities, comforts, and luxuries of life, at diminished cost of labour.

With each step of this progress there would be increased demand for the labour, both physical and mental, of the manufacturers of the North, for the demand for fine cloths and for silk would grow with the growth of the power to produce coarse cloth and iron; the demand for fine books would grow with the increase of school-books and newspapers; and the demand for cotton and woollen machinery would grow with the increase in the power to obtain railroad iron.

Between the manufacturer and the planter there is, therefore, perfect harmony of interest. All are alike interested in the exertion to shake off the load imposed upon them by the present monopoly of machinery; but of all the agriculturist is most interested. Its tendency is to reduce the power of production throughout the world, to diminish the power of consumption, and thus to destroy the customers of both planter and farmer. The tendency of protection is to raise the value of labour throughout the world, by increasing the estimation in which man is held abroad, and thereby to augment production and the power of consumption. With every increase in the tendency to fly from Europe, it would be felt more necessary to endeavour to keep the people at home. By that process, and that alone, will the labourer of the world be raised to a level with our own.

From a Treatise in the "Store of Knowledge."

THE DISEASES OF THE HORSE.

BY WILLIAM YOUATT.

THE principal diseases of the Horse are connected with the circulatory system. From the state of habitual excitement in which the animal is kept, in order to enable him to execute his task, the heart and the blood-vessels will often act too impetuously; the vital fluid will be hurried along too rapidly, either through the frame generally, or some particular part of it, and there will be *congestion*, accumulation of blood in that part, or *inflammation*, either local or general, disturbing the functions of some organ, or of the whole frame.

Congestion.—Take a young Horse on his first entrance into the stables; feed him somewhat highly, and what is the consequence? He has swellings of the legs, or inflammation of the joints, or perhaps of the lungs. Take a horse that has lived somewhat above his work, and gallop him to the top of his speed; his nervous system becomes highly excited; the heart beats with fearful rapidity; the blood is pumped into the lungs faster than they can discharge it; the pulmonary vessels become gorged, fatigued, and utterly powerless—the blood, arrested in its course, becomes viscid, and death speedily ensues. We have but one chance of saving our patient—the instantaneous and copious abstraction of blood; and only one means of preventing the recurrence of this dangerous state, namely, not suffering too great an accumulation of the sanguineous fluid by over-feeding, and by regular and systematic exercise, which will inure the circulatory vessels to prompt and efficient action when they are suddenly called upon to exert themselves. The cause and the remedy are sufficiently plain.

Again, the brain has functions of the most important nature to discharge, and more blood flows through it than through any other portion of the frame of equal bulk. In order to prevent this organ from being oppressed by a too great determination of blood to it, the vessels, although numerous, are small, and pursue a very circuitous and winding course. If a horse highly fed, and full of blood, is suddenly and sharply exercised, the course of the blood is accelerated in every direction, and to the brain among other parts. The vessels that ramify on its surface or penetrate its substance are completely distended and gorged with it. Perhaps they are ruptured, and the effused blood presses upon the brain; it presses upon the origins of the nerves on which sensation and motion depend, and the animal suddenly drops powerless. A prompt and copious abstraction of blood, or, in other words, a diminution of this pressure, can alone save the patient. Here is the nature, the cause, and the treatment of *apoplexy*.

Sometimes this disease assumes a different form. The horse has not been performing more than his ordinary work, or perhaps he may not have been out of the stable. He is found with his head drooping and his vision impaired. He

is staggering about. He falls, and lies half unconscious, or he struggles violently and dangerously. There is the same congestion of blood in the head, the same pressure on the nervous origins, but produced by a different cause. He has been accustomed habitually to overload his stomach, or he was, on the previous day, kept too long from his food, and then he fell ravenously upon it, and ate until his stomach was completely distended and unable to propel forward its accumulated contents. Thus distended, its blood-vessels are compressed, and the circulation through them is impeded or altogether suspended. The blood is still forced on by the heart, and driven in accumulated quantity to other organs, and to the brain among the rest; and there congestion takes place, as just described, and the animal becomes sleepy, unconscious, and, if he is not speedily relieved, he dies. This too is apoplexy; the horseman calls it *stomach staggers*. Its cause is improper feeding. The division of the hours of labor, and the introduction of the *nose-bag*, have much diminished the frequency of its occurrence. The remedies are plain,—bleeding, physicing, and the removal of the contents of the stomach by means of a pump contrived for that purpose.

Congestions of other kinds occasionally present themselves. It is no uncommon thing for the blood to loiter in the complicated vessels of the *liver*, until the covering of that viscous has burst, and an accumulation of coagulated black blood has presented itself. This congestion constitutes the *swelled legs* to which so many horses are subject when they stand too long idle in the stable, and it is the source of many of the accumulations of serous fluid in various parts of the body, and particularly in the chest, the abdomen, and the brain.

Inflammation is opposed to *congestion*, as consisting in an active state of the capillary arterial vessels; the blood rushes through them with far greater rapidity than in health, from the excited state of the nervous system by which they are supplied.

Inflammation is either *local* or *diffused*. It is confined to one organ, or to a particular portion of that organ; or it involves many neighboring ones, or it is spread over the whole frame. In the latter case it assumes the name of *fever*. Fever is general or constitutional inflammation, and is said to be *sympathetic* or *symptomatic* when it can be traced to some local affection or cause, and *idiopathic* when we cannot so trace it. The truth probably is, that every fever has its local cause, but we have not a sufficient knowledge of the animal economy to discover that cause.

Inflammation may be considered with reference to the membranes which it attacks.

The *mucous membranes* line all the cavities that communicate with the external surface of the body. There is frequent inflammation of

the membrane of the mouth. *Blain*, or *Glossanthrax*, is a vesicular enlargement which runs along the side of the tongue. Its cause is unknown. It should be lanced freely and deeply, and some aperient medicine administered.—*Barbs*, or *paps*, are smaller enlargements, found more in the neighborhood of the bridle of the tongue. They should never be touched with any instrument; a little cooling medicine will generally remove them. *Lampas* is inflammation of the palate, or enlargement of the bars of the palate. The roof of the mouth may be slightly lanced, or a little aperient medicine administered: but the sensibility of the mouth should never be destroyed by the application of the heated iron. *Canker* and *wounds in the mouth* from various causes, will be best remedied by diluted tincture of myrrh, or a weak solution of alum.

Foreign bodies in the gullet may generally be removed by means of the probang used in the hoove of cattle; or the œsophagus may be opened, and the obstructing body taken out.

It is on the mucous membranes that *poisons* principally exert their influence. The *yew* is the most frequent vegetable poison. The horse may be saved by timely recourse to equal parts of vinegar and water injected into the stomach, after the poison has been as much as possible removed by means of the stomach-pump. For arsenic or corrosive sublimate there is rarely any antidote.

Spasmodic colic is too frequently produced by exposure to cold, or the drinking of cold water, or the use of too much green meat. The horse should be walked about, strong friction used over the belly, and spirit of turpentine given in doses of two ounces, with an ounce each of laudanum and spirit of nitrous ether, in warm water or ale. If the spasm is not soon relieved the animal should be bled, an aloetic ball administered, and injections of warm water with a solution of aloes thrown up. This spasmodic action of the bowels, when long continued, is liable to produce *introsusception*, or *entanglement*, of them, and the case is then hopeless.

Superpurgation often follows the administration of a too strong or improper dose of physic. The torture which it produces will be evident by the agonized expression of the countenance, and the frequent looking at the flanks. Plenty of thin starch or arrow-root should be given both by the mouth and by injection; and, twelve hours having passed without relief being experienced, chalk, catechu, and opium should be added to the gruel.

Worms in the intestines are not often productive of much mischief, except they exist in very great quantities. Small doses of emetic tartar with a little ginger may be given to the horse half an hour before his first meal, in order to expel the round white worm; and injections of linseed-oil or aloes will usually remove the ascarides, or needle-worms.

The *respiratory passages* are all lined by the mucous membrane. *Catarrh*, or cold, inflammation of the upper air passages, should never be long neglected. A few mashes or a little medicine will usually remove it. If it is neglected, and occasionally in defiance of all treatment, it will degenerate into other diseases. The larynx may become the principal seat of inflammation. *Laryngitis* will be shown by extreme difficulty of breathing, accompanied by a strange roaring noise, and an evident en-

largement and great tenderness of the larynx when felt externally. The windpipe must be opened in such case, and the best advice will be necessary. Sometimes the subdivisions of the trachea, before or when it first enters the lungs, will be the part affected, and we have *bronchitis*. This is characterized by a quick and hard breathing, and a peculiar wheezing sound, with the coughing up of mucus. Here, too, decisive measures must be adopted, and a skillful practitioner employed. His assistance is equally necessary in *distemper*, *influenza*, and *epidemic catarrh*, names indicating varieties of the same disease, and the product of atmospheric influence; differing to a certain degree in every season, but in all characterized by intense inflammation of the mucous surfaces, and rapid and utter prostration of strength, and in all demanding the abatement of that inflammation, and yet little expending of vital power.

Cough may degenerate into *inflammation of the lungs*; or this fearful malady may be developed without a single premonitory symptom, and prove fatal in twenty-four or even in twelve hours. It is mostly characterized by deathly coldness of the extremities, expansion of the nostril, redness of its lining membrane, singularly anxious countenance, constant gazing at the flank, and an unwillingness to move. A successful treatment of such a case can be founded only on the most prompt and fearless and decisive measures. The lancet should be freely used. Counter-irritants should follow as soon as the violence of the disease is in the slightest degree abated; sedatives must succeed to them, and fortunate will he be who often saves his patient after all the decisive symptoms of pneumonia are once developed.

Among the consequences of these severe affections of the lungs are *chronic cough*, not always much diminishing the usefulness of the horse, but strangely aggravated at times by any fresh accession of catarrh, and too often degenerating into *thick wind* which always materially interferes with the speed of the horse, and in a great proportion of cases terminates in broken wind. It is rare indeed that either of these diseases admits of cure. That obstruction in some part of the respiratory canal, which varies in almost every horse, and produces the peculiar sound termed *roaring*, is also rarely removed.

Glanders, the most destructive of all diseases to which the horse is exposed, is the consequence of breathing the atmosphere of foul and vitiated stables. It is the winding up of almost every other disease, and in every stage it is most contagious. Its most prominent symptoms are a small but constant discharge of sticky matter from the nose; an enlargement and induration of the glands beneath and within the lower jaw, on one or both sides, and, before the termination of the disease, chancreous inflammation of the nostril on the same side with the enlarged gland. Its contagiousness should never be forgotten, for if a glandered horse is once introduced into a stable, almost every inhabitant of that stable will, sooner or later, become infected and die.

The urinary and genital organs are also lined by mucous membranes. The horse is subject to *inflammation of the kidneys* from eating musty oats or mowburnt hay, or from exposure to cold and injuries of the loins. Bleeding, physic, and counter irritants over the region of the loins should be had recourse to. *Diabetes*, or *profuse staling*, is difficult to treat. The inflammation

that may exist should first be subdued; and then opium, catechu, and the uva ursi administered. *Inflammation of the bladder* will be best alleviated by mucilaginous drinks of almost any kind. *Inflammation of the neck of the bladder*, evinced by the frequent and painful discharge of small quantities of urine, will yield only to the abstraction of blood and the exhibition of opium. A catheter may be easily passed into the bladder of the mare, and the urine evacuated, but it will require a skillful veterinary surgeon to effect this in the horse. A *stone in the bladder* is readily detected by the practitioner, and may be extracted with comparative ease. The *sheath* of the penis is often diseased from the presence of corrosive mucous matter. This may easily be removed with warm soap and water.

To the mucous membranes belong the conjunctival tunic of the eye, and the diseases of the eye generally may be here considered. A *scabby itchiness* on the edge of the eyelid may be cured by a diluted nitrated ointment of mercury. *Warts* should be cut off with the scissors, and the roots touched with lunar caustic. *Inflammation of the haw* should be abated by the employment of cooling lotions, but that useful defence of the eye should never, if possible, be removed. Common *ophthalmia* will yield as readily to cooling applications as inflammation of the same organ in any other animal; but there is another species of inflammation, commencing in the same way as the first, and for a while apparently yielding to treatment, but which changes from eye to eye, and returns again and again, until blindness is produced in one or both organs of vision. The most frequent cause is hereditary predisposition. The reader cannot be too often reminded that the qualities of the sire, good or bad, descend, and scarcely changed, to his offspring. How *moon-blindness* was first produced no one knows; but its continuance in our stables is to be traced to this cause principally, or almost alone, and it pursues its course until cataract is produced, for which there is no remedy. *Gutta serena* (palsy of the optic nerve) is sometimes observed, and many have been deceived, for the eye retains its perfect transparency. Here, also, medical treatment is of no avail.

The serous membranes are of great importance. The brain and spinal marrow, with the origins of the nerves, are surrounded by them; so are the heart, the lungs, the intestinal canal, and the organs whose office it is to prepare the generative fluid.

Inflammation of the brain.—Mad staggers fall under this division. It is inflammation of the meninges, or envelops of the brain, produced by over-exertion, or by any of the causes of general fever, and it is characterized by the wildest delirium. Nothing but the most profuse blood letting, active purgation, and blistering the head, will afford the slightest hope of success. *Tetanus* or *locked jaw* is a constant spasm of all the voluntary muscles, and particularly those of the neck, the spine, and the head, arising from the injury of some nervous fibril—that injury spreading to the origin of the nerve—the brain becoming affected, and universal and unbroken spasmodic action being the result. Bleeding, phlebotomy, blistering the course of the spine, and the administration of opium in enormous doses, will alone give any chance of cure. *Epilepsy* is not a frequent disease in the Horse, but it seldom admits of cure. It is also very apt to return at the most distant and uncertain

intervals. *Palsy* is the suspension of nervous power. It is usually confined to the hinder limbs, and sometimes to one limb only. Bleeding, phlebotomy, antimonial medicines, and blistering of the spine, are most likely to produce a cure, but they too often utterly fail of success. *Rabies*, or madness, is evidently a disease of the nervous system, and, once being developed, is altogether without remedy. The utter destruction of the bitten part with the lunar caustic, soon after the infliction of the wound, will, however, in a great majority of cases, prevent that development.

Pleurisy, or inflammation of the serous covering of the lungs and the lining of the cavity of the chest, is generally connected with inflammation of the substance of the lungs; but it occasionally exists independent of any state of those organs. The pulse is in this case hard and full, instead of being oppressed; the extremities are not so intensely cold as in pneumonia; the membrane of the nose is little reddened, and the sides are tender. It is of importance to distinguish accurately between the two, because in pleurisy more active purgation may be pursued, and the effect of counter irritants will be greater from their proximity to the seat of disease. Copious bleedings and sedatives here also should be had recourse to. It is in connection with pleurisy that a serous fluid is effused in the chest, the existence and extent of which may be ascertained by the practiced ear, and which in many cases may be safely evacuated.

The heart is surrounded by a serous membrane, the pericardium, that secretes a fluid, the interposition of which prevents any injurious friction or concussion in the constant action of this organ. If this fluid increases to a great degree, it constitutes *dropsy of the heart*, and the action of the heart may be impeded or destroyed. In an early stage it is difficult to detect, and in every stage difficult to cure.

The heart itself is often diseased; it sympathizes with the inflammatory affection of every organ, and, therefore, is itself occasionally inflamed. *Carditis*, or *inflammation of the heart*, is characterized by the strength of its pulsations, the tremor of which can be seen, and the sound can be heard at a distance of several yards. Speedy and copious blood letting will afford the only hope of cure in such a case.

The outer coat of the stomach and intestines is composed of a serous membrane, the peritoneum, which adds strength and firmness to their textures, attaches and supports and confines them in their respective places, and secretes a fluid that prevents all injurious friction between them. This coat is exceedingly subject to inflammation, which is somewhat gradual in its approach. The pulse is quickened, but small; the legs cold; the belly tender; there is constant pain, and every motion increases it; there is also rapid and great prostration of strength. These symptoms will sufficiently characterize *peritoneal inflammation*. Bleeding, aperient injections, and extensive counter irritation will afford the only hope of cure.

The time for *castration* varies according to the breed and destiny of the Horse. On the farmer's colt it may be effected when the animal is not more than four or five months old, and it is comparatively seldom that a fatal case then occurs. For other horses, much depends on their growth, and particularly on the development of their fore quarters. Little improvement

has been effected in the old mode of castrating, except the opening of the scrotum and the division of the cord by the knife, instead of the heated iron.

Synovial or joint membranes are interposed between the divisions of the bones, and frequently between the tendons, in order to secrete a certain fluid that shall facilitate motion and obviate friction. Occasionally the membrane is lacerated, and the synovia escapes. This is termed *opened joint*, and violent inflammation rapidly ensues. The duty of the practitioner is to close this opening as quickly as possible. Nothing is so effectual here as the application of the cautery. A great deal of inflammation and engorgement are produced around the opening, partially, if not altogether, closing it; or at least enabling the coagulated synovia to occupy and obliterate it. Perhaps, in order to secure the desired result, the whole of the joint should be blistered. After this a bandage should be firmly applied, and kept on as long as it is wanted. If there is any secondary eruption of the synovia, the cautery must again be had recourse to.

The Navicular Disease is a bruise, or inflammation, or perhaps destruction, of the cartilage of the navicular bone, where the flexor tendon of the foot passes over it in order to reach the coffin-bone. The veterinary surgeon can alone ascertain the existence and proper treatment of this disease. *Spavin* is an enlargement of the inner side of the hock. The splint-bones support the inferior layer of those of the hock, and as they sustain a very unequal degree of concussion and weight, the cartilaginous substance which unites them to the shank-bone takes on inflammation. It becomes bony instead of cartilaginous, and the disposition to this change being set up in the part, bony matter continues to be deposited, until a very considerable enlargement takes place, known by the name of *spavin*, and there is considerable lameness in the hock-joint. The bony tumor is blistered, and probably fired, but there is no diminution of the lameness until the parts have adapted themselves, after a considerable process of time, to the altered duty required of them, and then the lameness materially diminishes, and the horse becomes, to a very considerable extent, useful. *Curb* is an enlargement of the back of the hock, three or four inches below its point. It is a strain of the ligament which there binds the tendons down in their place. The patient should be subjected to almost absolute rest; a blister should be applied over the back of the tumor, and, occasionally, firing will be requisite to complete the cure. Near the fetlock, and where the tendons are exposed to injury from pressure or friction, little bags or sacks are placed, from which a lubricating mucous fluid constantly escapes. In the violent tasks which the Horse occasionally has to perform, these become bruised and inflamed, and enlarged and hardened, and are termed *windgalls*. They blemish the horse, but are no cause of lameness after the inflammation has subsided, unless they become very much enlarged. The cautery will then be the best cure. Immediately above the hock enlargements of a similar nature are sometimes found, and, as they project both inwardly and outwardly, they are termed *thorough-pins*. They are seldom a cause of lameness, but they indicate great and perhaps injurious exertion of the joint. On the inside of the hock a tumor of this kind, but of a more serious nature, is found. It is one of these enlarged mucous bags, but very

deeply seated and the subcutaneous vein of the hock passing over it. The course of the blood through the vein is thus in some measure arrested, and a portion of the vessel becomes distended. This is a serious evil, since, from the deep-seatedness of the mucous bag, it is almost impossible to act effectually upon it. It is termed *bog* or *blood spavin*.

The cellular tissue which fills the interstices of the various organs, or enters into their texture, is the seat of many diseases. From the badness of the harness, or the brutality of the attendant, the poll of the horse becomes contused. Inflammation is set up, considerable swelling ensues. An ulcerative process soon commences, and chasms and sinuses of the most frightful extent begin to be formed. The withers also are occasionally bruised, and the same process takes place there, and sinuses penetrate deep beneath the shoulder, and the bones of the withers are frequently exposed. These abscesses are termed *poll evil* and *fistulous withers*, and in the treatment of them the Horse is often tortured to a dreadful extent. A better mode of management has, however, been introduced; setons are passed through the most dependent parts; no collection of sanious fluid is permitted to exist, and milder stimulants are applied to the surface of the ulcer.

An abscess of a peculiar character is found between the branches of the lower jaw in young horses. It is preceded by some degree of fever. It is usually slow in its progress, but at length it attains a considerable size, including the whole of the cellular tissue in that neighborhood. There is one uniform mass of tumefaction. This is *strangles*. It seems to be an effort of Nature to get rid of something that oppresses the constitution, and the treatment of it is now simple and effectual. It is encouraged by fomentations and blisters. It is punctured as soon as the fluctuation of a fluid within it can be fairly detected—the pus speedily escapes, and there is an end of the matter.

Farcy.—While the arterial capillaries are engaged in building up the frame, the absorbents are employed in removing that which is not only useless, but would be poisonous and destructive. They take up the matter of glanders and of every ulcerating surface, and they are occasionally irritated, inflamed and ulcerated from the acrimonious nature of the poison which they carry. The absorbents are furnished with numerous valves. The fluid is for a while arrested by them, and there the inflammation is greatest, and ulceration takes place. This is the history of the farcy cords and buds. Farcy is a highly contagious disease, whether or not it be connected with glanders. It, however, occasionally admits of cure from the application of the cautery to the buds, and the administration the corrosive sublimate or the sulphate of iron internally.

The skin of the Horse is subject to various diseases. Large pimples or lumps suddenly appear on it, and, after remaining a few days, the cuticle peels off, and a circular scaly spot is left. This is called *surfeit*. The cause is obscure, but principally referable to indigestion. A slight bleeding will always be serviceable. Physic rarely does good, but alteratives composed of nitre, black antimony, and sulphur, will be very beneficial. *Mange* is a disease of a different character. It is the curse of the stable into which it enters, for it will almost certainly affect every Horse. Thorough dressings with Barbadoes tar and linseed oil, in the proportion

of one of the former to three of the latter, will be the most effectual external application, while alteratives and physic should be given internally. *Hide-bound* is a very appropriate term for the peculiar sticking of the hide to the ribs when a horse is out of condition. The subcutaneous adipose matter is all absorbed. The alterative above recommended will be very useful here.

The legs, and the hind ones more than the fore ones, are subject to frequent and great and obstinate swellings, attended by great pain and considerable fever. It is acute inflammation of the cellular substance of the legs. Physic and diuretics, and tonics if there is the slightest appearance of debility, are the proper means of cure. Friction and bandages will also be useful occasionally. There is no disease in which the farrier and the groom do greater mischief than in this.

Grease is an undue secretion of the fluid which was designed to lubricate the skin of the heels, and that secretion is also altered in quality. The hind legs begin to swell—a fluid exudes from the heels—the hairs of the heels become erect like so many bristles, and the skin of the heel is hot and greasy. Soon afterward cracks appear across the heel; they discharge a thick and offensive matter, and then deepen. They spread up the leg, and so does the tumefaction of the part. In process of time the skin, inflamed and ulcerated, undergoes an alteration of structure; prominences or granulations appear on it, assuming the appearance of a collection of grapes, or the skin of a pine-apple. They increase, and a fetid discharge appears from the crevices between them.

The cause is generally neglect of the Horse. He is suffered to stand in the stable with his heels cold and wet, which necessarily disposes them to inflammation and disease.

In the first stage of grease, bran or turnip or carrot poultices will be serviceable, with moderate physic. Then astringents must be employed, and the best are alum or sulphate of copper in powder, mixed with several times the quantity of Bole Armenian, and sprinkled on the sores. These should be alternated every three or four days. The grapy heels are a disgrace to the stable in which they are found, and admit not of radical cure.

Splints are bony enlargements, generally on the inside of the leg, arising from undue pressure on the inner splint-bone, and this either caused by the natural conformation of the leg, or violent blows on it. These excrescences will often gradually disappear, or will yield to a simple operation, or to the application of the hydriodate of potash or blister ointments. *Sprains*, if neglected, occasionally become very serious evils. Rest, warm fomentations, poultices, or, in bad cases, blistering are the usual remedies. *Windgalls*, if they are of considerable size, or accompanied by much inflammation or lameness, will find in a blister the most effectual remedy. *Sprains of the fetlock* demand prompt and severe blistering. Nothing short of this will produce a permanent cure. *Sprains of the pastern and coffin-joints* demand still more prompt and decisive treatment. If neglected or inefficiently managed, the neighboring ligaments will be involved, more extensive inflammation will be set up, and bony matter, under the name of *ring-bone*, will spread over the pasterns and cartilages of the foot. Firing alone will, in the majority of cases, be efficient here.

Inflammation of the foot, or acute founder.—In speaking of the structure of the foot, the laminae, or fleshy plates on the front and sides of the coffin-bone, were described. From over-exertion, or undue exposure to cold or wet, or sudden change from cold to heat, inflammation of these laminae is apt to occur, and a dreadfully painful disease it is. It is easily detected by the heat of the feet, and the torture which is produced by the slightest touch of the hammer. The shoe must be removed, the sole well pared out, plentiful bleeding from the toe had recourse to, the foot well poulticed, and cooling medicines resorted to. The bleeding should be repeated if manifest benefit is not procured, and cloths dipped in dissolved nitre, which are colder than the common poultice, should be substituted. After this a poultice around the foot and pastern must succeed. Little food should be given, and that must consist of green meat or mashies.

Pumiced Feet.—This is one of the consequences of inflamed feet. The sole of the foot becomes flattened, or even convex, by the pressure of the weight above. There is no cure here, and the only palliation of the evil is obtained from the application of a shoe so beveled off from the crust that it shall not press upon or touch the sole. This, however, is only a temporary palliation, for the sole will continue to project, and the horse will be useless.

Contracted Feet.—By this is meant an increase in the length of the foot, and a gradual narrowing as the heels are approached; and as the necessary consequence of this, a diminution of the width of the foot and a concavity of the sole. In point of fact, the whole of the foot, including the coffin-bone, becomes narrowed, and consequently elongated. This change of form is accompanied by considerable pain; the action of the Horse is altered; there is a shortened tread, and a hesitating way of putting the foot to the ground.

The frog and heel would expand when the weight of the Horse descends and is thrown upon them, but the nailing of the shoe at the heels prevents it. Thence the pain and lameness. Mr. Turner of Regent-street obviates this by a very simple method. He puts four or five nails in the shoe on the outside, and only two on the inside. There is then sufficient room for the natural expansion to take place, and the foot and action of the Horse are little or not at all changed. This is an admirable contrivance, and recourse should always be had to it.

The Navicular Joint Disease.—There are many Horses with open and well-formed feet that are lame. In every motion of the foot there is a great deal of action between the navicular bone and the flexor tendon which passes over it in order to be inserted into the navicular bone. From concussion or violent motion, the membrane or the cartilage which covers the navicular bone is bruised or abraded, the horse becomes lame, and often continues so for life. This disease admits of remedy to a very considerable extent; no one, however, but a skillful veterinary surgeon is capable of successfully undertaking it.

Sand-crack is a division of the crust of the hoof from the upper part of it downward. It bespeaks brittleness of the foot, and often arises from a single false step. If the crack has not penetrated through the horn, it must nevertheless be pared fairly out, and generally a coating of pitch should be bound round the foot. If the

crack has reached the quick, that *must* be done which ought to be done in every case—a skillful surgeon should be consulted, otherwise false quarter may ensue.

False Quarter is a division of the *ligament* by which the crust is secreted. It is one of the varieties of sand-crack, and exceedingly difficult to cure.

Tread or *Overreach* is a clumsy habit of setting one foot upon or bruising the other. It should immediately and carefully be attended to, or a bad case of *quittor* may ensue.

Quittor is the formation of little pipes between the crust and the hoof, by means of which the purulent matter secreted from some wound beneath the crust makes its escape. The healing of this, and of every species of *prick* or *wound* in the sole or crust, is often exceedingly difficult.

Corns are said to exist when the posterior part of the foot between the external crust and the bars is unnaturally contracted and becomes inflamed. Corns are the consequence of continued and unnatural pressure. The thorough cure of corns will put the ingenuity of the operator to the trial.

Thrush is the consequence of unnatural pressure on the frog. It is the cause and the effect of contraction, whether it is found in the heels of the fore feet or the hinder ones. It is not difficult to cure when taken in time, but when neglected it often becomes a very serious matter.

Canker is the consequence of thrush, or, indeed, of almost every disease of the foot. It is attended by a greater or less separation of horn, which sometimes leaves the whole of the sole bare. This, also, like the diseases of the foot generally, is difficult of cure.

Few things are more neglected, and yet of greater importance to the comfort and durability of the Horse, than a proper system of *shoeing*. It is necessary that the foot should be defended from the wear and tear of the roads, but that very defence too often entails on the animal a degree of injury and suffering scarcely credible. The shoe is fixed to the foot, and often interferes with and limits the beautiful expansibility of that organ, and thus causes much unnecessary concussion and mischief.

The shoe of a healthy foot should offer a perfectly flat surface to the ground. The bearing ~~or~~ weight of the Horse will then be diffused over the surface of the shoe, and there will be no injurious accumulation of it on different points. Too often, however, there is a convexity toward the inner edge, which causes an inequality of bearing, and breaks and destroys the crust. Round the outer edge of the shoe, and extended over two-thirds of it on the lower surface, a groove is sunk, through which pass the nails for the fastening of the shoe. At first they are somewhat project, but they are soon worn down to the level of the shoe, which in the healthy foot should not vary from the heel to the toe.

The width of the shoe will depend on that of the foot. The general rule is that it should protect the sole from injury, and be as wide at the heel as the frog will permit.

The upper surface of the shoe should be differently formed. It should be flat along the upper end, outer supporting the crust, or, in other words, the weight of the horse, and widest at the heel, so as to meet and withstand the shock of the bars and the crust. The inner portion of the shoe should be beveled off, in order that, in

the descent of the sole, that part of the foot may not be bruised. The owner of the Horse should occasionally be present when the shoes are removed, and he will be too often surprised to see how far the smith, almost wilfully, deviates from the right construction of this apparently simple apparatus. The beveled shoe is a little more troublesome to make and to apply than that which is often used by the village smith, but it will be the owner's fault if his directions are not implicitly obeyed.

Even at the commencement of the operation of shoeing, the eye of the master or the trustworthy groom will be requisite. The shoe is often torn from the foot in a most violent and cruel way. Scarcely half the elenches are raised when the smith seizes the shoe with his pincers and forcibly wrenches it off. The shrinking of the Horse will tell how much he suffers, and the fragments of the crust will also afford sufficient proofs of the mischief that has been done, especially when it is recollected that every nail-hole is enlarged by this brutal force, and the future safety of the shoe to a greater or less degree weakened, and pieces of the nail are sometimes left in the substance of the crust, which become the cause of future disease.

In the paring out of the foot, also, there is frequently great mischief done. The formidable *butteris* is still often found in the smithy of the country farrier, although it is banished from the practice of every respectable operator. A worse evil, however, remains. By the *butteris* much of the sole was injuriously removed, and the foot was occasionally weakened, but the *drawing-knife* frequently left a portion of sole sufficient to destroy the elasticity of the foot, and to lay the foundation for contraction, corns and permanent lameness. One object, then, of the looker-on is to ascertain the actual state of the foot. On the descent of the crust, when the foot is placed on the ground, depends the elasticity and healthy state of the foot, and that may be satisfactorily determined by the yielding of the sole, although to a very slight degree, when it is strongly pressed upon with the thumb. The sole being pared out, the crust on each side may be lowered, but never reduced to a level with the sole, otherwise this portion will be exposed to continual injury.

The heels often suffer considerably from the carelessness or ignorance of the smith. The weight of the Horse is not thrown equably on them, but considerably more on the inner than the outer quarter. The consequence of this is that the inner heel is worn down more than the outer, and the foundation is laid for tenderness and ulceration. The smith is too often inattentive to this, and pares away an equal quantity of horn from the inner and outer heel, leaving the former weaker and lower, and less able to support the weight thrown upon it.

Mention has already been made of the use of the *bars* in admitting and yet limiting to its proper extent the expansion of the foot. The smith in the majority of country forges, and in too many of those that disgrace the metropolis, seems to have waged interminable war with these portions of the foot, and avails himself of every opportunity to pare them down, or perfectly destroy them, forgetting, or never having learned, that the destruction of the bars necessarily leads to contraction by removing the chief impediment to it.

The horn between the crust and the bar should be well pared out. Every one accustomed to

Horses must have observed the great relief that is given to the Horse with corns when this angle is pared out, and yet from some fatality, the smith rarely leaves it where Nature placed it, but cuts away every portion of it.

The true function of the frog is easily understood. It gives security to the tread, and contributes expansion to the heels; but the smith, although these cases come before him every day, seems to be quite unaware of the course which he should pursue, and either leaves the frog almost untouched, and then it becomes bruised and injured, or he pares it away so that it cannot come into contact with the ground, and consequently is not enabled to do its duty.

The owner of the Horse will therefore find it his interest occasionally to visit the forge, and guided by the simple principles which have

been stated, he will seldom err in his opinion of what is going forward there. He should impress two principles deeply on his mind, that a great deal more depends on the paring out of the foot than in the construction of the shoe: that few shoes, except they press upon the sole, or are made shamefully bad, will lame the Horse, but that he may be very easily lamed by an ignorant or improper paring out of the foot.

Where the owner of the Horse has sufficient influence with the smith, he will find it advisable always to have a few sets of shoes ready made. Much time will be saved, in case of accident, and there will not be, as is too often the case, the cutting and paring and injuring of the foot, in order to make it fit the shoe. More injury than would be readily believed is done to the foot by contriving to get on it too small a shoe.

INSECTS MOST INJURIOUS TO VEGETABLES AND ANIMALS, AND THE MEANS BEST CALCULATED TO COUNTERACT THEIR RAVAGES

BY REV. JAMES DUNCAN, M. W. S.

[From the Journal of the Highland Agricultural Society of Scotland.]

LICE.—Almost all our domestic animals are well known to be more or less infested with minute parasites, which have been long referred by naturalists to the genus *Pediculus*. The great majority of our native animals, whether wild or in a domestic state, have their peculiar kinds appropriated to them. Indeed, it was long imagined that each and every animal had its own peculiar parasite, but this is not altogether borne out by facts; for,

“Although, in the majority of cases, a distinct species of insect is found upon each particular animal, *i. e.* quadruped or bird, yet there are several instances where the same kind infests three or four different species of birds, but, in such exceptions, they are almost always confined to individuals of the same genera or family, or at least to species of similar habits. This is more strictly the case with birds than quadrupeds. For instance, *Dicophorus icteroides* I have found on nearly every species of duck which has come under my notice. I have received it from other birds also; but they were of aquatic habits, and belonging to the order *Natatores*. The *Nirmus obscurus* infests several species of sandpipers, godwits, &c., the *Nirmus rufus* upon several of the hawks and falcons; and *Dicophorus lani* upon nearly all the gulls. In the instances among quadrupeds it is rather doubtful whether the species is common to two different animals or not, or whether they may not have been merely transferred by associating or frequenting the same place of abode; as—for example, the *Trichodectes scalaris* found both upon the ox and ass—where the animals are feeding in the same stall, or sleep together, a transfer of property might easily be made. The *Hematopinus piliferus* infests dogs, and I have received specimens from the ferret, which last animal was said to swarm with them. Here it is rather difficult to account for the occurrence, as I am not aware that the two animals ever live on friendly terms with each other; and, moreover, the person from whom I received them informed me that he had not a dog. When we extend our observations to genera, we find they take a much wider range, and it is in only two or three cases that we could with any confidence assert that they were diagnostic of certain families of Vertebrata. It is easy to say whether they are belonging to quadruped or bird, but more difficult to pronounce the peculiar family of either, as some genera of each division appear perfect cosmopolites, as, for instance,

the genus *Pediculus* of Linn., (since divided into *Pediculus* and *Hematopinus*), besides infesting man, is also found in the orders *Quadrumania*, on monkeys; *Rodentia*, on the squirrel, hare, rabbit, water-rat; *Carnivora*, on the dog and seal; *Pachydermata*, on the swine, ass and camel; *Ruminantia*, on the deer, ox, and buffalo. The genus *Nirmus*, again, is very extensively spread, infesting every order of birds but the *Gallinacea*. *Dicophorus*, all but *Gallinacea* and *Columbida*; *Lipeurus* infesting the orders *Gallinacea*, *Gralla*, *Palmipeds*, and *Accipitres*; while, on the other hand, a few, as I have stated, are nearly certain indexes to the families. *Eureum* only on *Chelidones*; *Trinoton* only on *Palmipeds*; *Goniocotes* and *Goniodes* only on *Gallinacea* and *Columbida*; *Gyropus* only on the Guinea-pig in this country. Dr. Burmeister enumerates a species also from the Ai, (*Bradypus tridactylus*) and, lastly, the genus *Phthirus* on man.”*

Not only are there numerous instances of one kind of pedicular parasite being confined to one kind of animal, but in not a few cases there is a particular species assigned to different parts of the same animal, and these are seldom found to encroach on their respective provinces. This fact, in a physiological point of view, is exceedingly curious, and difficult to be accounted for. In Mr. Denny's beautiful work, a quotation from which has just been given, all the species hitherto found in this country are described and figured in a style of art which has been seldom surpassed as applied to entomological subjects. He enumerates nearly 250 different species as occurring on British animals. The great majority of these are found in too small numbers to produce any injury of importance; but others, again, as is well known to every one that rears and fattens cattle, multiply excessively at times, and are productive of great uneasiness and annoyance to the animals, while they greatly impair their look by denuding the skin of the hair, and giving it a very unsightly appearance.

Naturalists differ in opinion as to whether these insects undergo a true metamorphosis, like others of their class. The truth appears to be,

* “Denny's Monographia Anoplurorum Britannie,” p. ix.

that the metamorphosis is very imperfect, and seems to consist in a series of consecutive changes of skin, and gradual increase in size, such as might be expected in an animal in its progress to maturity, rather than to form a metamorphosis, properly so called. In all stages they are active, and possess the power of taking food.

It is of importance, in a practical point of view, to be acquainted with the marks by which these troublesome and disagreeable parasites are distinguished, because different methods of destroying them require to be adopted according to their different habits and places of residence. The whole tribe is divided into two sections; the one containing such species as are provided with a tubular sucker, the other, the kinds having the mouth provided with two horny mandibles or jaws. These differences in the structure of the mouth must obviously exercise a great influence on their habits and general modes of procedure.

The first we shall notice, which is one of the most common and troublesome, belongs to the last-mentioned division; it is the *Trichodectes scalaris*. The genus *Trichodectes* is known by having the antennæ three-jointed; the tarsi with one claw; the head horizontal and scale-like, with the mouth beneath; mandibles strong, tridentate at the apex; the eyes very inconspicuous, and at all times invisible. All the species live upon quadrupeds, their food consisting of hair, wool, and exfoliated particles of the epidermis. Their jaws act horizontally, and cut off the hair close by the roots, exactly as if it had been done with a pair of scissors.

T. scalaris, *Pediculus bovis*, Linn. LOUSE OF THE OX, is about half a line in length, the head and thorax of a bright rust-yellow, the former with two dusky spots in front, and of an abcordate shape; eyes prominent; antennæ pale yellow, the third joint longest and spindle-shaped; abdomen oblong, pale, tawny, finely pubescent, the first six segments with a transverse rust-red or dusky band on the upper half, and a large longitudinal spot of the same color on each side; the hinder extremity with a large similarly colored spot; legs pale; the claws nearly straight. (Fig. 1.)

This species is very common on cattle, and for the most part is found about the roots of the hair on the mane.

T. equi, *Pediculus equi*, Linn. LOUSE OF THE HORSE.—Nearly one-half larger than the preceding, but in other respects bearing a close resemblance to it. The head and thorax are of a bright chestnut color; the head somewhat square, with the angles rounded, and much wider than the thorax, having an angular dusky line on each side posteriorly; antennæ pale, thick, the last joint longest, and somewhat club shaped; abdomen obcon-

ical, colored nearly as in *T. scalaris*; legs pale, thick and strong, the tibiæ abruptly clavate; the tarsi short. (Fig. 2.)

Common on the horse and ass, multiplying to a great extent when these animals are afflicted with certain kinds of diseases. It is said to be most plentiful when the animals are fresh from pasture. Several other species belonging to this genus are found on different animals. One occurs on the sheep, (*T. sphaerocephalus*), another (*T. longicornis*) on the fallow-deer, and a third (*T. similis*) on the red-deer; but they never appear to increase on these animals to an injurious extent.

Hæmatopinus erythrinus, Linn. LOUSE OF THE OX.—In this genus the mouth is formed for sucking, there being a short tube projecting from the mouth;

the antennæ are five-jointed; the thorax distinctly separated from the abdomen, and much narrower, shorter and broader than the head; abdomen large, depressed, commonly oval, consisting of eight or nine segments; legs formed for climbing, very thick and strong; claws single and incurved. Perhaps the most plentiful of all the species which infest cattle is that named above. The head, which is of a chestnut color, is somewhat triangular, rounded behind; the thorax dull chestnut, nearly square, with a spiracle and an impressed line on each side; abdomen greyish-white, or ochraceous, smooth and shining, with four longitudinal rows of dusky, horny excrescences, the last segment with two black, curved marks; legs chestnut, the extremity of the claws black. Length from 1 to 1½ lines. (Fig. 3.)

It is this species, for the most part, that proves so troublesome to stabled oxen. It frequents chiefly the mane and shoulders. Being a suctional insect, it cannot directly strip off the hair, but, by abstracting the juices by which the bulb or root of the hair is nourished, it makes it more liable to fall off; and the irritation its punctures occasion causes the animals to rub themselves till the skin is quite bare. Mr. Denny remarks that the young are much more agile than the mature insect, and differ in nothing except a want of proportion, the limbs being much thicker as compared with the bulk of the body than when adult. Another species, somewhat similar in appearance, (*H. vituli*), occurs in the calf, but it does not appear to be common.

Hæmatopinus suis, Linn. LOUSE OF SWINE.—Head

and thorax dusky rust-color, the former somewhat pear-shaped, with an angular black line at the apex, and one on each side before the eyes; hinder angles of the thorax acute, each side with a distinct spiracle; abdomen large, flat and oval; of a membranaceous consistency, bluish or yellowish ash color, sometimes nearly white; the second and five following segments with a black,

Fig. 3.

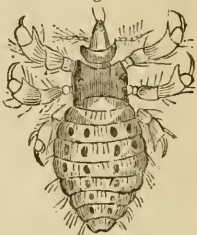


Fig. 1.

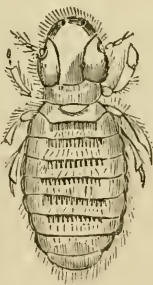


Fig. 2.



Fig. 4.



horny excrescence on each side surrounding the spiracles; the hinder segment with a black patch on each side; legs pale, long and thick. Length $1\frac{1}{4}$ to $1\frac{3}{4}$ lines. (Fig. 4.)

This species is found, for the most part, in great plenty on all kinds of swine, although certain breeds appear to be infested with more than others. Mr. Denny states that it does not appear to be so generally spread as might be expected from the dirty habits of the animals.

"It most frequently occurs (he says) on those fresh imported from the Sister Isle. It was many months before I could obtain a single example. I had applied to both farmers and pig butchers, neither of whom seemed to approve of the idea which I had conceived of their pigs being *lousy*, but referred me to those of the Emerald Isle as being sure to gratify my wishes—(forgetting, I suspect, that the Irish pigs come to this market to meet English buyers.) I accordingly visited a colony just arrived, when I certainly met with a ready supply; but here they were confined almost entirely to lean animals, and wherever I found a pig fat or healthy, no game were to be seen. In walking, this species uses the claw and tibial tooth with great facility (which act as finger and thumb) in taking hold of a single hair. The male is much smaller, with the abdomen shorter, suborbicular, and the segments lobate; the egg or nit is $\frac{1}{3}$ of a line in length, of a cream-color, and elegantly shagreened, oblong, and slightly acuminate, surrounded by a lid, which, when the young insect is ready to emerge, splits circularly, or, as a botanist would say, has a circumscissile dehiscence."

H. asini, *Pediculus asini*, Linn. LOUSE OF THE ASS.—About the size of the preceding species; color rust-yellow on the head and thorax, the former very long, narrow anteriorly, with two black patches on each side near the apex; abdomen large and ovate, pale-yellowish white, wrinkled and hairy, with a dusky, horny excrescence surrounding each spiracle; the last segment with a large angular black spot on each side; legs short and thick, the color of the thorax. Length 1 to $1\frac{1}{2}$ lines.

This parasite is very plentiful on the ass, particularly about the head and mane, but, probably, owing to the thick skin of the animal, it does not appear to occasion it much annoyance. The rabbit is also infested with a peculiar species of *Hæmatopinus*, and likewise the dog, but they seldom increase to any great extent.

These are the principal pedicular parasites which are most annoying to our most useful quadrupeds. Birds of almost every kind, whether wild or tame, have also their peculiar inhabitants of this class; not a few of them are infested by several different kinds. This is the case more especially with the common domestic fowl, which has at least five species appropriated to it. Of these, one of the most common, which may be seen running over the hands of those employed in plucking fowls, and which is difficult to brush off, owing to the flatness and smoothness of its body, is the

Menopon pallidum, *Pediculus gallinae*, Linn. It is very minute, not exceeding $\frac{1}{4}$ or $\frac{1}{3}$ of a line in length; the color pale straw, the surface shining and smooth; head triangular and obtuse, with pitted spots on each side; antennæ with the fourth joint large and oblong, and terminating in a tuft of hairs; eyes dark; abdomen elongate oval, the segments equal; legs rather thick, the anterior thighs broad and round. The other species which infest poultry are the *Goniodes dissimilis*, a genus remarkable for having, in the males, the third joint of the antennæ recurved toward the first, and forming a claw, by which the insect can lay hold of a hair, the barb

of a feather, or any other small object; *Goniocotes hologaster*, having the head, thorax and legs pale yellow, with pitted black marginal bands and spots, and the abdomen with pale ash-colored lateral bands bordered with black. Neither of these two species is common. But the *Lipeurus variabilis*, which may be known by being of a dull white color margined with black, is very abundant on the domestic fowl, preferring the primary and secondary feathers of the wings, among the webs of which it moves with great celerity.

Two or three different species inhabit the various kinds of pigeon. Of these the most common is *Goniocotes compar*, which has a large head, with produced acute angles behind, from each of which two long bristles project; abdomen white, broad and obovate, the margin all round rusty brown; length from 1 to $1\frac{1}{2}$ line. Next to this in frequency, and sometimes still more abundant, is *Lipeurus baculus*, the body of which is very narrow and elongated, the head angular and depressed; the abdomen nearly cylindrical, dull yellow-white, with a series of large trapezoidal dusky patches on each side. Few birds, Mr. Denny remarks, are so infested with parasites as the *Columbidae*; besides four species of lice, he has found upon them a large *Ixodes*, a small *Acarus*, and the *Pulex columbae*; and Rev. S. Jenyns detected a bug, *Cimex columbarius*, which he has described in the "Annals of Natural History."*

Grouse, and their near ally, the common partridge, are far from being exempted from these unwelcome visitors; and in unhealthy seasons, when the former are in a debilitated state, the attacks of the parasites tend greatly to retard or prevent their recovery. *Goniodes tetraonis* infests both the black-cock and common grouse, and is, for the most part, very common. The form of the head resembles that of *Goniocotes compar*; color of the head and thorax pale chestnut yellow; abdomen pale yellowish-white, obovate, lateral margin bright chestnut, each segment, except the antepenultimate, with a pitted sutural, somewhat club-shaped, abbreviated band. Length about a line; the female somewhat larger. *Nirmus cameratus* is also common on the red grouse. It is much smaller than the above, deep chestnut color and pilose; head short, and somewhat heart-shaped; central band and sutures of the abdomen pale yellow white. The species most frequently observed on the common partridge is *Menopon perdricis*, a very minute insect, not exceeding $\frac{1}{4}$ of a line in length, of a dull ochrey yellow, the head large and almost semilunar, with a dusky spot on each side, and a band before each eye; the abdomen broad. A more remarkable looking species, also frequenting this bird, is named *Goniodes dispar*, but it is not of frequent occurrence. One of the largest known parasites of this class occurs on the peacock. It is *Goniodes falcicornis*, *Pediculus paronis*, Linn. The female is about 2 lines in length; and the male has the first joint of the antennæ with a large tooth on the internal edge; second cylindrical; the apex oblique; third long and recurved; fourth and fifth very small, in the female filiform. This insect may be found after the death of the bird collected in numbers about the base of the beak and crown of the head. *Goniodes stylifer*, which has a considerable general resemblance to the above, is found on the turkey; it is easily recognized

* Vol. V. p. 242.

by having the hinder angles of the head produced into a sharp projection like a horn.

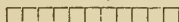
Many other of our domestic birds, such as geese, ducks, &c., have each a peculiar parasite of this class assigned to them, and there are scarcely any of our wild birds that are without similar assailants. But in such cases, the parasites appear to do little or no injury, and it is unnecessary, therefore, to refer to them more particularly.

In regard to the means best adapted for counteracting the ravages of these parasites, lice on cattle and horses may be destroyed by a plentiful and repeated application of oil, and also by repeated rubbing of mercurial ointment into the affected parts of the skin: but, on using this latter substance, care should be taken not to expose the animal to rain or cold.

LINSEED COMPOUND, AS FOOD FOR STOCK.

We are not aware of the extent to which American feeders of cattle have proceeded in the use of flax-seed, in lieu of oat-cake and other substances, as food for stock; but believing that under certain circumstances it may be expedient so to employ it, we deem it our duty to throw all the light we can on a subject upon which there is no redundancy of information. Hence we give the following, from one made familiar with it by much experience.

Linseed Compound.—1st, Let a quantity of linseed be reduced to fine meal. 2d, Put about 16 gallons of water into a copper, and let it boil. 3d, Stir into the water quickly 2 lbs. of the linseed meal, and let it boil for about five minutes. 4th, Let 60 lbs. of barley or bean meal be sprinkled upon the boiling mucilage by the hand of one person, while another, as rapidly as possible, stirs and works it in. The whole will now have assumed the form of a thick mess or pudding. When cold the compound should be perfectly stiff. Many farmers put it into moulds, like those used for bricks, while hot. They are thus made, and



placed upon a flat piece of board, somewhat larger and wider. The compound is put in with a trowel, and pressed down firmly; the moulds are then lifted up, and the cakes left to cool. In this way the food will keep longer; but I generally put it into a tub, and ram or press it down with an instrument made of wood,* in order to exclude the air. The compound is generally given in small quantities at first, and increased at pleasure—for the first week, 5 lbs. or 7 lbs. per day, when, according to the size of the animal and quality of other food given, the quantity may be increased to 14 lbs., 21 lbs., or 28 lbs. per day. Observe, the inside of the mould should be a little wider at the bottom, in order to prevent the compound from sticking to the sides. With respect to making beans into compound, no difference is to be observed, except that they will require 2 or 3 gallons, or even more, of water than barley, as you will perceive in the course of your experience. But observe, the beans must be reduced to a fine meal, equal, if possible,

to flour. Linseed can be incorporated with chopped hay or straw with great effect. I use it largely, and find it much cheaper than corn. The proportions, according to the size of my copper, are nine pails of water and a pail and a half of linseed meal, and about nine bushels of cut hay, chaff, or straw. The plan of mixing is first to form the mucilage as you would for other compounds; next place a large tub with a strong bottom, or trough, near the copper; then put a bushel of the cut hay into it, and your two or three bowls of the boiling mucilage upon it, which is to be immediately stirred up with hay. Then add a bushel of the hay, with some more of the mucilage, which, after being intimately mixed, is to be pressed down as firmly as possible with the rammer. The first layer is then finished. Proceed as before till the copper is empty; smooth the top of the mess over with the trowel, and in the course of two or three hours it will be fit for use. To make cattle-compound with potatoes or white carrots, nothing more is required than, after having been properly steamed or boiled, to remove them from the vessels as hot as possible into a trough, then sprinkle some linseed meal upon them, and knead the whole into a mass with the rammer. The compound may be put hot into the moulds, and made into cakes, or used from the trough. Less labour will be required if the roots are removed from the cooking vessels in small quantities, and incorporated with the meal. The effect of giving only 1 lb. of linseed meal per day to a bullock, when incorporated with potatoes or carrots, will soon become visible; but if a pound or two more were added, the animal would fatten at a rate which those alone who watched the proceedings could believe. The price of linseed for crushing purposes appears to be about five farthings per pound. Remember that when the hay compound becomes cold, it turns sour, and the bullocks then reject it. Mine eat it smoking.

Method of putting Two Swarms into one Hive.

—PEOPLE are apt to consider their own plans best, therefore I may be excused, perhaps, for thinking that a plan I have for putting two swarms of bees together, or putting a swarm into an old weak hive, is better than any I have seen mentioned. On the swarm leaving the hive, I shake it into an octagonal wood box, which has at the top a hole 3 inches in diameter, which hole is closed by a slide the same day; in the evening, after all the bees have got in, I place the hive into which I wish the swarm to enter upon the top of the box, which I have previously smeared with honey, and then draw the slide; this usually causes a number of the bees which have been hanging to the slide to fall down on to the floor of the box, and creeping up again to join their companions, they find a hole through which they pass, and the rest follow them to feed upon the honey they find there, and then creep forward, still upward, so that next morning I generally find a united family without the stinging, or fighting or killing of bees, consequent on the plans mentioned by other parties, as the amalgamation in most instances takes place without any of the bees being killed, or quarrelling with each other.—T. G. Clitheroe.

* These rammers are square or club-ended, with a knob like a pestle at top, or a cross-stick through, to give better hold.

GOVERNOR HAMMOND'S ADDRESS BEFORE THE SOUTH CAROLINA INSTITUTE.—EXTRACTS AND COMMENTS.

WANT of room has until now prevented us from calling the attention of our readers to the excellent address of Governor Hammond, delivered before the South Carolina Institute, in November last. We have read it with infinite pleasure, and would gladly give the whole of it, but must content ourselves with some extracts, from which our readers will see that he teaches the essential doctrine that the plough cannot flourish at a distance from the loom and the anvil, and that for the farmers and planters to flourish, *they must make a market on the land for the products of the land.* That he and we do not as yet agree as to the measures necessary for bringing about that great work, we do not deem important; satisfied as we are, that when our planting friends shall have determined that the British policy, which looks now, as it did before the Revolution, to compelling all nations to make their exchanges in British ports, and to making Britain "the workshop of the world," is adverse to their interests, they will not be long in discovering that the measures we advocate are those which tend to the speedy and safe establishment of *perfect freedom of trade*, and the only ones that can produce that result.

"What are we to do in South Carolina?" Such is the question that meets us here as in every journal published in that State.

"But a small portion of the land," says Governor Hammond, "we now cultivate will produce two thousand pounds of ginned cotton to the hand. It is thought that our average production cannot exceed twelve hundred pounds, and that a great many planters do not grow over one thousand pounds to the hand. A thousand pounds, at five cents nett, will yield about two per cent., in cash, on the capital invested; and twelve hundred pounds, but three per cent., after paying current plantation expenses. At such rates of income our state must soon become utterly impoverished, and of consequence wholly degraded. Depopulation, to the utmost possible extent, must take place rapidly. Our slaves will go first, and that institution from which we have heretofore reaped the greatest benefits, will be swept away; for history, as well as common sense, assures us, beyond all chance of doubt, that whenever slavery ceases to be profitable, it must cease to exist.

"These are not mere paper calculations, or the gloomy speculations of a brooding fancy. They are illustrated and sustained by facts, current facts of our own day, within the knowledge of every one of us. The process of impoverishment has been visibly and palpably going on, step by step, with the decline in the price of cotton. It is well known, that for the last twenty years, floating capital to the amount of five hundred thousand dollars per annum, on the average, has left this city and gone out of South Carolina, seeking and finding more profitable investments than were to be found here. But our most fatal loss, which exemplifies the decline of our agriculture and the decay of our slave system, has been owing to emigration. The natural increase of all the slaves in the south, since the prohibition of the African Slave Trade, has been thirty per cent. for every ten years. From 1810 to 1820, the increase in South Carolina was a fraction above that rate. From 1820 to 1830, it was a fraction below it. But from 1830 to 1840, the increase was less than seven per cent. in ten years; and the census revealed the painful and ominous fact that the number of slaves in South Carolina was eighty-three thousand less than it should have been. No war, pestilence, or famine had visited our land. No change of climate, or of management, had checked the natural increase of this class of our population. There can be no reasonable doubt that the ratio of its increase had been as fully maintained here as elsewhere. But the fact is that, notwithstanding the comparatively high average price of cotton from 1830 to 1840, these slaves had been carried off by their owners, at the rate of eight thousand three hundred per annum, from a soil producing to the hand twelve hundred pounds of cotton, on the average, to one that yielded eighteen hundred pounds. And there is every reason to apprehend that the census of next year will show that the whole increase of the last decade, which must amount to one hundred thousand, has been swept off by the still swelling tide of emigration."

"Under these circumstances," says our orator, "the question may well be

asked again, "What are we to do in South Carolina?" The answer is thus given :—

"The first remedy for our decaying prosperity, which naturally suggests itself, is the improvement of our agricultural system; and of late years a great deal has been said upon this subject. That it is susceptible of great improvement is very clear, but it is equally and lamentably true that little or nothing has as yet been done. It must be owned that neither our agricultural societies nor our agricultural essays have effected anything worth speaking of. And it does seem, that while the fertile regions of the South West are open to the cotton planters, it is vain to expect them to embark, to any extent, in improvements which are expensive, difficult, or hazardous. Such improvements are never made but by a prosperous people, full of enterprise and abounding in capital, like the English—or a people pent up within narrow limits, like the Dutch. Our cotton region is too broad, and our Southern people too homogeneous for metes and bounds, to enforce the necessity of improving any particular locality; and our agriculture is now too poorly compensated to attract superfluous capital or stimulate to enterprise. It is clear that capital, enterprise, some new element of prosperity and hope must be brought in among us, from some yet untried or unexhausted resource, before any fresh and uncommon energy can be excited into action in our agricultural pursuits. In fact, if prices had not gone down and our lands had not worn out, it may be said with great truth, that we have too long devoted ourselves to one pursuit, to follow it exclusively much longer with due success in all those particulars, which constitute a highly prosperous and highly civilized community.

"It is a common observation that no man of one idea, no matter how great his talent and his perseverance, ever can succeed. For both human affairs and the works of nature are complete, exhibiting everywhere an infinite variety of mutual relations and dependencies, many of which must be comprehended and embraced in searching after truth, which is the essential basis of all real success. So, if guided by the light of history, we look back over the long track of time, we shall find that no nation devoted exclusively to one pursuit has been prosperous or powerful for any extended period. Even the warlike Spartans zealously promoted agriculture. And Rome began to decline from the moment that she ceased to draw her soldiers and her generals from her fields and vineyards. But a people wholly agricultural have ever been, above all others, in all ages, the victims of rapacious tyrants, grinding them down, in ancient times, by force of arms, in modern, by cunning laws. The well-known fact suggests the obvious reason, and the reason illustrates our present condition and apparent prospects. The mere wants of man are few and limited. The labour of one can supply all that the earth can yield for the support of ten. If all labour, there is useless superabundance. If few labour there is corrupting sloth. And if advancing civilization introduces new wants, and the elegancies and luxuries, as well as the necessities of life, are to be obtained, the products of agriculture are the least profitable of all articles to barter. Besides that most nations strenuously endeavour to supply them from their own soil, they are usually so bulky, and so liable to injury, that they can seldom be transported far, and never but at great expense. It is only when an agricultural people are blessed with some peculiar staple, of prime importance, nowhere else produced so cheaply, that they can obtain, habitually, a fair compensation by exporting it. But in the present state of the world, when science and industry, backed by accumulated capital, are testing the capacity of every clime and soil of the globe, and the free and cheap communication which is now growing up between all the ends of the earth, enables wealth and enterprise to concentrate rapidly on every favoured spot, no such monopoly can be long enjoyed if sufficiently valuable to attract the cupidity of man. South Carolina and Georgia were, for some years, almost the only cultivators of cotton in America. As late as 1820, these two States grew more than half the whole crop of the Union. They now produce about one-fifth of it. Such is the history of all agricultural monopolies in modern times.

"But we may safely go further and assert, that even when a people possess a permanent and exclusive monopoly of a valuable agricultural staple, for which there is a regular, extensive and profitable foreign demand, if they limit their industrial pursuits to this single one, they cannot become great and powerful. Nay, they cannot now attain the front rank of nations, if they also pursue, as we do, most of the other branches of agriculture, and maintain as we do not, an independent government of their own, and exercise the power of making war and peace. The types of man have been infinitely varied by his wise Creator. Our minds are as diverse as our forms and features. The tastes, the talents and the physical capacities with which we are endowed, are as widely different, and as strongly marked for their appropriate pursuits as those pursuits have been diversified by Providence. War and public affairs call into action a large proportion of the highest qualities of man, and these, sustained by simple husbandry, did, in

ancient times, make some nations powerful and prosperous. But war is no longer profitable. National pillage is at an end, and territorial aggrandizement, a doubtful benefit at best, is both uncertain in its tenure and costly to maintain. Now, and henceforth, national grandeur, to be real and lasting, must be based upon the arts of peace. And in these noble arts, the competition of nations has become so keen and persevering, that every one must develop, to the full extent, its natural advantages, and keep in constant play each and all of the natural endowments, of each and all its citizens, or it will fall rapidly behind in the arduous but steady march of progress. The soils and climates of Italy Spain and the low countries are as prolific, and the native genius of their people is doubtless equal to what it was in the days of Augustus, Charles the Fifth, and Van Tromp. Yet they have sunk from the highest almost to the lowest point in the scale of nations. But their pursuits are no longer diversified as they once were. Their ships have been swept from the seas—their armies from the land. Their manufactures have been superseded, and commerce has deserted their ports; while they have introduced no new industrial avocations to supply their losses. All the endowments of the whole people being no longer taxed to full and wholesome action, they have languished in idleness, and national decay has, of necessity, followed. So with us. Our agriculture, though it might embrace a wide range in such a clime as ours, and furnish us with highly compensating exports, cannot, even with the assistance of public affairs, absorb all the genius and draw out all the energies of our people. The infinite variety of gifts which it has pleased God to bestow on man, must be stimulated into useful action by an equal variety of adequate rewards. It is to the never-ceasing demands of advancing civilization, in all its stages, for new arts, new comforts, new luxuries, more knowledge and wider intercourse of men with one another, that we owe all the discoveries and inventions which have ameliorated and elevated the condition of humanity. And every new conception, every new art, every new combination of pursuits, industrial and intellectual, which has expanded the genius, and augmented the power of man and nations of men, has rendered it more and more impossible for an individual of one idea, or a people of one occupation, to attain prosperity and influence.

“Since, then, even a flourishing agriculture could not, of itself, make us permanently rich or great, the greatest improvements that could be made in our present decaying system would be but a partial and insufficient remedy for the evils under which we labour. We must take a wider range, and introduce additional pursuits, that will enlist a broader interest, that will absorb all our redundant capital, and awaken all the intellect and energy now dormant in our state. On this occasion, however, we will confine our discussion to new industrial pursuits. If we look around us, we shall see that those nations only are powerful and wealthy which, in addition to agriculture, devote themselves to commerce and manufactures; and that their wealth and strength are nearly in exact proportion with the extent to which they succeed in carrying on together these three great branches of human industry. The principle of the Trinity, perfected in the Deity, seems to pervade all the works of nature and the affairs of man. Time divides itself into three parts—three lines are necessary to inclose space—a proper government must be distributed among three fundamental departments, and the industrial system of a people must, if it would flourish, embrace agriculture, manufactures and commerce, and cherish each in just proportion. Commerce, experience shows us, is the handmaid of manufactures.—Agriculture does not create it, as our own example proves, for we have literally none we may call our own. With eight millions of agricultural exports, South Carolina has scarcely a ship, or a sailor, afloat upon the seas. The Institute, whose anniversary we have met to celebrate, was founded in part, for the purpose of assisting to lift the Mechanic Arts from the low condition they have hitherto occupied in South Carolina and the South, and to stimulate our people to avail themselves of the manufacturing and commercial resources they possess. These resources are little known and less appreciated; but it is demonstrable that our Southern States possess natural advantages which enable them to compete successfully with any other in manufacturing the principal articles now required for the necessities, the comfort, and the luxury of man. While, with our abundant materials for ship-building, our noble bays and rivers, and our shore line of twenty thousand miles of sea-coast, we have only to make the attempt to obtain, beyond rivalry, the entire command of at least our own commerce. In the distribution of these natural advantages, the share which has fallen to South Carolina is not inferior to that of any of her sister States. And the present stagnant and retrograding condition of our uncompensated industry, loudly appeals to us to make an effort to secure the full enjoyment of them.”

“Those nations alone are powerful and wealthy which, in addition to Agriculture, devote themselves to Commerce and Manufactures.” Here is the answer to the great question. If South Carolina would be powerful and

wealthy, she must have diversification of products. But how is this great object to be accomplished?

"It is, however, strenuously contended," says Governor Hammond, "that the introduction of manufacturing into the south would undermine our free trade principles, and destroy the last hope of the great agricultural interest. It is susceptible of demonstration that the consequences would necessarily be precisely the reverse. The manufacturing people of the north desire a high tariff for no other purpose but to compel the non-manufacturing people of the south to buy from them in preference to foreigners. If the south manufactures for itself, the game is completely blocked. We will of course use the productions of our own looms and work-shops in preference to any others; and the north will then clamor, as the English manufacturers are now clamoring, for entire free trade, that they may exchange their industrial products, on the most favourable terms, with foreign nations. This result is as inevitable as it is obvious."

Here lies the difficulty. The south believes that by manufacturing for herself the game of New England would be "completely blocked;" and that it may be "blocked," the planters refuse to take *for themselves* that protection, the inevitable effect of which would be to bring about that state of things in which the whole country, north, south, east, and west, would be clamorous for perfect freedom of trade; when, in short, that protection would have ceased to be required. It is time that the farmers and planters of the Union should open their eyes to the fact that throughout the whole Union there is perfect harmony of interests, and that the south cannot block the game of New England without blocking its own. Had the tariff of 1828 been continued to the present time, the *domestic* manufactures of cotton would require at least 1,200,000 bales, and there would be now a market at home for every yard of the cloth made from it, for we should this year be making two millions of tons of iron, and mining ten or twelve millions of tons of coal, and importing a million of men to make the roads upon which the iron was to be laid, to build the furnaces and the mills for making more cloth and iron, and to wear the cloth and eat the food produced by prosperous farmers and planters, who would not then be inquiring, "What are we to do in South Carolina?"

The direct effect of the vacillating system that has been thus far pursued, has been that of building up New England at the expense of the south and west, and *the only mode* that can be adopted for restoring the south to its proper position in the Union is that of perfect and steady protection. When protection ceases or is diminished, the earliest stoppages of mills and furnaces are those of the south and west, and the latest are those of the north and east; and the reason is that the former are less capable of carrying on their business under unfavourable circumstances than the latter. The New England manufacturer is surrounded by men of large capital engaged in trade, and he can have assistance, whereas the southern and western manufacturers are in the midst of landholders, who are unable to render aid when aid is needed. The New England factories, the latest to stop, are the first to start when a change takes place, and their owners pay themselves for their lost time before the southern factories begin to move. We entreat our southern friends to look at these facts, and facts they are, as they can satisfy themselves by a study of the industrial history of every State in the Union south of Mason and Dixon's line.

What the south needs is *more factories*, not *substituted* ones. They have built mills in Georgia, but those of Maryland are closed, and those of Massachusetts are now closing. The transfer of mills from New England, Pennsylvania, and Maryland, to Georgia or South Carolina, will make no addition to their market for cotton, for if it be only a transfer, they will be as much under the control of Southern manufacturers as now they are under that of Northern ones. Let them adopt such a policy as shall ensure the transfer of the coarse machinery of Lowell to the cotton fields of the south, and the

filling of the Lowell mills with finer machinery, and they will soon find an answer to the question, "What are we to do in South Carolina?" They must make a market on the land for all the products of the land, which they can and will do, whenever they shall have satisfied themselves that the road to perfect freedom of trade lies through perfect protection.

ARTESIAN WELLS IN ALABAMA—MODE AND COST OF PREPARING.

We tender thanks, in the name of our readers, practical and scientific, to the obliging writer of the following. Ah! if all who are, in like manner, well informed on particular subjects of importance, in respect of which practical knowledge is limited, would thus answer to respectful calls for information, how much more diffusive of useful knowledge might our journals be made.

Than the "cane-brake" region of Alabama, there is no portion of the Union we have been more curious to see—none of which we have a higher opinion, in respect of its fertility, from what we have heard, and from specimens of the soil we have seen; nor, let us add, any where we have, or have had, friends more highly esteemed for superior intelligence, high social qualities, and genuine hospitality. Alas! that the necessity of daily labour, for daily bread, should tie one down forever, like Darwin's *Vegetable Lamb*,

"Rooted in earth, each cloven hoof descends,
And round and round her flexile neck she bends."

TUSCALOOSA, May 4th, 1850.

To the Editor of the "*The Plough, Loom, and Anvil*."

SIR—In one of the last numbers of your valuable paper, you call upon your subscribers to furnish some information upon the subject of the Artesian Wells, so usual in some parts of this State, their cost, &c. I pretend to no science upon this subject, but having some experience in reference to them, I can, perhaps, make myself intelligible to your readers.

The Artesian Wells of Alabama are confined to the calcareous region called the "Cane-brake" and "Prairie," according as it is timbered or destitute of timber. It is a region of great fertility, but destitute of springs, and from the peculiar character of the soil, ordinary wells cannot be obtained. Beneath the soil is a compact soft limestone of great depth, and so impervious to water that cisterns hollowed out of it retain water like a glass bottle. This soft limestone rests upon a bed of sandstone, at a depth which varies from 100 to 1000 feet, and doubtless much greater, as that distance has been penetrated without reaching the hard rock. Below this stratum of hard rock pure sand is found, from which the water ascends through the bore and generally gushes out at the surface, in some instances in a stream bold enough to propel machinery.

The mode of boring these wells is to sink a shaft through the superincumbent soil to the compact lime rock, in which a common pump-log is securely inserted. A scaffold is then erected of poles about thirty feet high, to the top of which a block and tackle is secured; the boring then commences through the log with a hollow auger, generally of 3 or 3½ inches bore, which is worked by hand through the soft rock. When the auger is full it is drawn out by the aid of the block and tackle, the rope being usually attached to a common windlass, but sometimes, in deep wells, is worked by horse power. The mode of carrying the boring to such great depths is by means of pine poles, three inches in diameter and about thirty feet long, at one end of which is a male and at the other a female screw, and when a pole is sunk to a level with the surface, another is screwed on, and so continued until the hard rock is reached. This rock is perforated by attaching a pick instead of the auger to the first pole, which is worked by means of a large

lever. When the rock is perforated through, a copper bucket, 12 feet long, is attached to the pole; and as there is a movable valve at the lower end of the bucket, by working it up and down the sand ascends in the bucket, and is retained there by the falling of the valve, caused by the weight of the sand. When the bucket is full it is drawn up and emptied, and this process is continued until a sufficient quantity of sand is removed to enable the water to rise.

When the water does not rise to the surface, or in sufficient quantity, the sand is removed to the next layer of hard rock, which is invariably found, but at various depths. This rock is then perforated and sand again removed, and in this way four or five successive layers of rock, of sand and flint rock, are sometimes perforated.

From the nature of the soft lime rock, no piping or tubing is necessary, it being, as already stated, impervious to water; but it sometimes happens that a tube has to be inserted where the hard rock terminates to prevent the sand from flowing in with the water and stopping the bore.

You will gather from this brief narrative that it is owing to the peculiar character of this portion of the State that piping or tubing is not necessary from the surface, and is the reason why these wells are not found except in the prairie or cane-break portions of the State. The charge for these wells was formerly very high, but now they are bored at very moderate prices, as low as twenty-five cents a foot for moderate depths. When the well exceeds three hundred feet, the labour and consequently the price are increased almost in a geometric ratio, so much time being consumed in unloading the auger and bucket, and replacing the poles.

The water thus obtained is generally of the most delicious quality, as clear as crystal and sufficiently cool to be pleasant; and when it is considered that the water thus procured is to be had at any point you choose to designate, in a country which would otherwise be as arid in the summer and autumnal months, except in the neighbourhood of the large creeks, as the deserts of Arabia, some opinion may be formed of their value. I have six of these wells on my plantation in Marengo county, varying in depth from two hundred to four hundred and seventy-five feet, four of which flow over above the surface, furnishing as pure and delicious water as was ever tasted.

Dr. Withers, of Green county, bored one of these wells on the bank of the Marion River, for the purpose of supplying a steam engine with water. The supply was so abundant that he conceived the idea of boring others, and collecting the water for the purpose of propelling machinery. He bored three others, which furnish each a constant stream of water three or four inches in diameter. He has not yet applied it to the intended purpose, but there are several instances where such an application has been made of these wells in this region. They are also used for the supply of fish-ponds, and to aid in supplying mill-ponds.

This communication has been already extended beyond my intention, and prevents my giving such a view of the country as would enable a stranger to account geologically for the abundant supply of water obtained by boring in this particular region, and also for the various depths of these wells. I hope enough has been said to interest scientific men as well as practical planters to an investigation of the subject, or at least to satisfy curiosity.*

J. J. ORMOND.

* To such an investigation, some description of the topography of the country would seem to be necessary. It certainly presents a geological problem worthy of being studied and explained.—*Edit. P. L. and A.*



THE PRIZE PLAN OF A FARM-HOUSE,

WHICH TOOK THE PREMIUM AWARDED BY THE NEW YORK STATE AGRICULTURAL SOCIETY IN 1838—AWARDED TO MRS. SANFORD HOWARD OF THAT STATE.

EXCELLENT as this plan seems to us to be, combining beauty of exterior with economy and convenience of internal structure and arrangements, we confess it has for us, and in our eye, a still stronger recommendation—that of being the suggestion of the mind of a good housewife, obviously devoted to useful and appropriate study. What reflections does not this fruit of well-directed study lead one to make on the ill-judged course of female common-school

education generally, and on the idle and frivolous course of novel reading too usually indulged in by the females of our country? But we have no time to follow with our pen where our thoughts would lead us. Every reader will be ready to unite with us in the inference, that those who so well know how to plan, will quite as well know how to keep a good farm-house. May all such meet in the right quarter, with the support and reap the honours they deserve, for of such it may be safely predicated, "the heart of her husband doth safely trust in her, so that he shall have *no need of spoil*."

ALBANY, May 7th, 1850.

JOHN S. SKINNER, Esq.—Agreeably to your request, I herewith forward the plans of a farm-house, which received the premium of the New York State Agricultural Society at the January meeting, 1848.

The main object of the projector has been to furnish the best *ground-plan* for a complete farm-house. The style of finish being regarded as a secondary matter, may be chosen according to the taste and circumstances of the builder. The representation here given is ornamental, and at the same time compatible with convenience and comfort.

The committee who submitted the report in reference to these designs make the following remarks:—

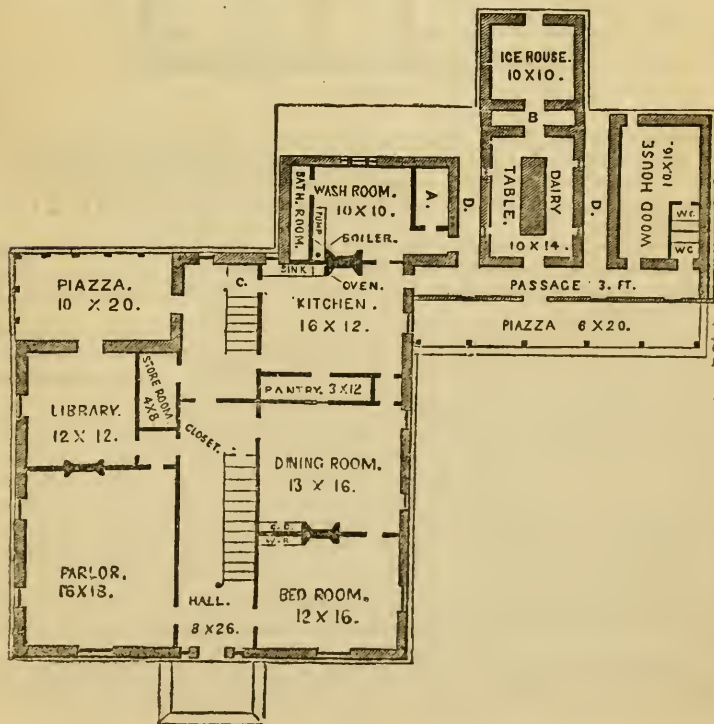
"The ground-plan gives an excellent and convenient arrangement, which could not be better described than in the lady's own words. The committee would say one word on the mode of warming houses by means of heated air from a furnace, which is adopted in the plan offered. The same correct notions of conveniences and comforts that suggested in the plan many of its arrangements, also suggest this most effectual, most economical, and least dangerous method of throwing a summer heat into all parts of even a large building. This supersedes all fires, excepting that essential bed of living coals in the kitchen."

For the details, I must refer you to the description herewith appended, furnished to the committee by Mrs. H. herself.

Yours,

SANFORD HOWARD.

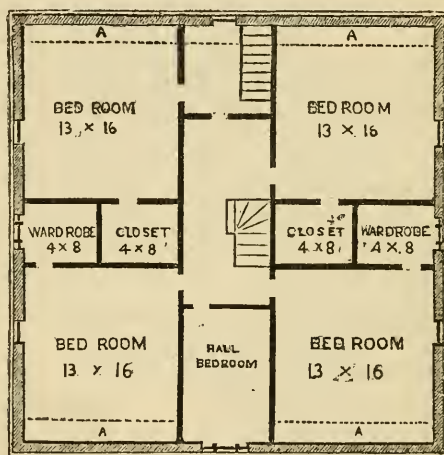
The accompanying plan is designed to front south, with an elevation of thirteen feet



from the sills to the roof. It should occupy somewhat elevated ground, sloping a little to the north, and should be raised on an underpinning to suit the ground. To give chambers of the size designated, the apex of the roof should be not less than twenty-two or twenty-three feet above the sills. It is highly proper to leave a *space* for air between the finish of the chambers and the roof, which will prevent the rooms from becoming heated in summer.

The site should be selected with a view to the easy construction of drains from the sinks, bathing-house, dairy, &c., directly to the piggery or barn-yard.

It is of course expected a good farmer will have a good cellar, and in some situations the best way of warming a house is by a hot-air furnace in the cellar.* The size of the cellar and its particular divisions should of course depend on the wants or circumstances of the builder. In some cases it may be expedient to have it extend under the whole of the main body of the house.



Second Floor.

It may be observed, however, that it is not advisable to store large quantities of vegetables under dwellings, as the exhalations from them, especially when unsound, are known to be decidedly prejudicial to health. Hence the *barn-cellar*, and not that of the dwelling-house, should be the repository of such vegetables as are wanted for the use of domestic animals.

Directions in regard to warming houses by furnaces may be found in works relating to the subject, or may be obtained from persons engaged in their construction. There are various modes; but my own experience does not enable me to decide upon their relative advantages.

In the construction of this plan it has been my object to combine utility and beauty, as far as practicable, with the *labour-saving* principle. In the arrangement of the kitchen and dairy, particularly, special regard has been had to securing the proper requisites for those important departments with the greatest practicable degree of convenience.

In constructing a dairy, it is proper that such an excavation should be made as will leave the floor, which should be made of stones, two or three feet below the surrounding surface. The sides should be of brick or stone, and plastered; the walls high, and the windows made so as to shut out the light and admit the air. The advantage of *thorough ventilation* and pure air is acknowledged by every one who has ever paid attention to the manufacture of butter, though it is a matter generally too little thought of in the construction of apartments for this purpose. It will be observed that, in the plan here-submitted, an open space of two and a half feet has been provided for on three sides of the dairy.

To render the establishment as perfect as possible, the command of a good spring of water, which may be conducted through the dairy-room, is necessary; when that cannot

* This is getting to be a very common practice in Philadelphia—to have chimneys with sham fire-places; but the great surgeon of Baltimore, Doctor Smith, has built himself and is living in a magnificent dwelling that has no chimneys at all.—*Ed. P. L. and A.*

be had, an ice-house in *direct contact* (as in the accompanying plan), and a good well of water convenient, form the best substitutes.

The expense of such a house in this vicinity might be varied from fifteen hundred to three thousand dollars, according to the style of finish, the taste and ability of the owner, &c. The main conveniences may be retained at the lowest estimate by omitting the ornamental front.

M. W. HOWARD.

PRICES OF WHEAT.—I send you another table relating to the prices of wheat, from the official reports obtained by Mr. Wilson, and alluded to in the debate in the House, on the 21st ult. As a multitude of figures, however, are not very attractive reading, I have shortened it as much as possible, merely stating what is absolutely necessary to make the results clear to the eye. I believe the accuracy of the figures may be depended on.

It gives the prices of wheat for the last ten years in France, Belgium, the Prussian Provinces (averaged on those of Pomerania, Posen, Saxony, Silesia, Westphalia, and the Rhenish districts), and also the shipping prices, during the winter season, at the ports of Amsterdam, Lubeck, Hamburgh, and Dantzic.

These afford, together, a fair average of what may be called the European prices for the period referred to. I should be glad if the port of Odessa were included; but its great distance, the less suitable quality of the wheat, and its comparative independence of our consumption, from its contiguity to the Mediterranean demand, render its influence not so great as that of the Baltic ports upon the English market. The table will repay study.

Average price of wheat per quarter in France, Belgium, Prussian Provinces, Amsterdam, Hamburgh, Lubeck, Dantzic, all united.

	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
England	46 4	49 8	41 3	40 2	35 5	47 9	54 0	62 3	42 2	36 6
	66 4	64 5	57 5	50 2	51 3	50 9	54 9	69 5	50 6	44 6
Difference	20 0	14 9	16 2	10 0	15 10	3 0	0 9	7 2	8 4	8 0

It will be seen from the above table that the two years of greatest plenty over Europe, during this decennial period, have been 1844 and 1840.

LORD LUCAN is probably the most extensive tillage farmer in Great Britain. He has at present upwards of 10,000 acres under his personal superintendence, having farm stewards on the different farms, who all take their instructions from himself. He has this year upwards of 1000 acres of white crop, and between 400 and 500 acres of green crop. He has a stock of 800 cattle, 60 of which are working bullocks, and 600 sheep; he has 40 horses, and gives employment on his farms to 600 men, including those who are making drains. After some other observations to the effect that Lord Lucan's system of management is admirable as to agency and superintendence in every department, from his lordship's practical knowledge of "HIS OWN BUSINESS," which he has not disdained to learn fully.

Governor Lloyd of Maryland owned fourteen farms, which he too superintended, personally, with managers on most of them—but such has been the improvement in that country since his day, that, we believe his elder son makes much more acre for acre. In fact, no part of the country is improving more visibly and steadily than most of the counties on the Eastern Shore of Maryland, perhaps we might say particularly Talbot and Queen Anne's and Kent, where they have free and frequent recourse to good ploughing—lime—guano—bone-dust and—*agricultural periodicals*. They find themselves remunerated ten times over in the increased products and rising value of their lands. Thus will it, and thus ought it, always to happen, with men who habituate themselves to *inquire and to think!*—Edit. P. L. and A.

THE MARYLAND STATE AGRICULTURAL SOCIETY.

Maryland State Agricultural Society—Its last Quarterly Meeting—Proceedings and comments on.—Large premium offered for a PORTABLE hay-press.—Agriculturists of Maryland resolved to act hereafter “in a body,” before the election.—Introduction of guano in the United States and in England.—Analysis of it by distinguished chemists of France and England, with other matters.

THE Society held its quarterly meeting at Baltimore, on 1st of May. It is said it

“Was well attended, and we are happy in being able to announce that the members present from various sections of the State gave assurance that the fall exhibition will be attended by a largely increased number of the farmers from this and other States. The most enthusiastic feeling pervaded the meeting, and the proceedings of the day evinced a zeal in the cause in which they are engaged which gives the fullest assurance that the agricultural interest of our State is fully aroused to the importance of its position, and a determination to press forward every measure calculated to promote this great interest of the country.”

We should like to have seen delegates in attendance from at any rate more than half the counties of the State. Those who did attend, certainly evinced a zeal highly honourable to themselves, and promising the best results, as far as depends on them.

The President, CHAS. B. CALVERT, Esq., (always true to his trust) took the chair, and called the attention of the members to several subjects requiring their action—among them the finances, and the prize list for the fall exhibition.

Mr. SANDS, the Secretary, presented and read sundry letters from Vice-Presidents of the Society, apologizing for their necessary absence from the meeting, but pledging themselves to co-operate in every measure recommended to carry out the objects of the Society.

How easy to write letters, if that could acquit us of our duty! But were all to content themselves with writing letters, what would become of the Society?

Also various letters from gentlemen of other States, approving the formation of a Central Society for the middle Atlantic States, tendering their aid in extending its usefulness, and asking to be enrolled as members of the Society.

The report of the Treasurer was then read—the receipts and expenditures to date showing a balance on hand of \$66.70. The Treasurer stated that there was a claim against the Society for balance due for lumber, and also for rent of hall, &c., for which it was necessary to make provision.

The President remarked that it was customary in the Northern States, for the cities or towns in which the great exhibitions are held, to come forward with an offer to furnish the necessary accommodations for the same, amounting in most cases to 3 or \$4000—the immense amount of money expended by visitors being an object to elicit great competition for the privilege. The President stated, moreover, that there had been made to him propositions from several places, within the proposed limits of the Central Society, to act in a similarly liberal spirit for the obtainment of the same privilege. He thought that the casual receipts of the Society should be applied to other objects of interest, and that the citizens where the exhibitions are held should feel obligated to furnish fixtures for the show.

On motion of Mr. Kettlewell it was

Resolved, That a committee of seven be appointed to call the attention of our citizens to the importance of such exhibition to their interests, and to solicit a subscription for the purpose of defraying such contingent expenses.

The resolution was read and unanimously adopted, and Messrs. Kettlewell, Wharton, Millburn, Luckett, Reynolds, T. W. Levering, and R. Sinclair, Jr., appointed the Committee.

Inquiries having been made as to the fate of certain memorials to the Legislature,

presented by the officers of the Society, for the enactment of a law for the preservation of sheep, and for the aid of the State to the funds of the Society—the President, who was Chairman of the Committee, reported that neither of these measures had been adopted by the Legislature—that notwithstanding nearly two-thirds of the members were farmers, yet all other objects presented to their consideration seemed to have weight and influence with them sufficient to secure their adoption; but it was too often the case, that anything calculated to advance the agricultural interest was suffered to lie on the table, and sleep the sleep of death. He thought the time had arrived when it was due to themselves that the agriculturists should *attend to their own interests, and command that attention and respect which their number and influence entitled them to expect at the hands of their servants*—and therefore offered the following resolutions:—

Resolved, That the rejection of the propositions offered to the last Legislature, for the benefit of agriculturists, is surprising and unaccountable, and calls for the most unqualified censure of all who are dependent on that profession for support.

Resolved, That the profession will, *in a body*, before the next election, take such measures as will secure their interest in future.

The resolutions were read and discussed at some length, and finally adopted with great unanimity.

With great deference we think it neither “surprising” nor “unaccountable.” Neither will it ever be otherwise, while party spirit supersedes public spirit; and while the question with every voter, as to every candidate for the high office of legislation, the highest that any man can exercise, is not, has he the most capacity and the strongest determination to understand and to forward the interests of agriculture in proportion to its importance? but—*is he the strongest man of our party?*

The profession will, *in a body*, before the next election, take such measures as will secure their interest in future! Well—“*nous verrons* :” we shall see, and be much and most agreeably mistaken, if the profession is not seen to go as usual, not in *one* but in *two* solid bodies.

The premium list was then reported, preparatory to which a short address was read by Geo. W. Dobbin, Esq., Cor. Sec., to accompany the same, which was adopted. The increase in the amount for the list of prizes is generally one-third, and in many cases 50 per cent. on the last year's appropriation. Among the new objects for which premiums are offered is a portable steam-engine for farm purposes—the liberal sum of \$100 is appropriated therefor—and \$25 for the best hay-press.

This resolution, offered by Mr. Horsey, to secure a *portable hay-press*, we look upon as one of great importance, too obviously so to require that anything should be said to illustrate it. Such an apparatus, if not too expensive and complicated, might be taken from farm to farm, and thus, by compression, make thousands of tons of hay and *straw*, available, that will not admit of transportation to market, in bulk—and the owner of the machine might be paid in money, or, like the miller, in a certain proportion of the substance.

This is the sort of effort at real improvement,—an indication of thought on the part of agricultural societies, which gives signs of real vitality and usefulness.

A committee of three, consisting of Messrs. Calvert, Dobbin and Sands, was appointed to obtain an orator to deliver the annual address.

Mr. J. C. Walsh offered the following resolution, which was read and adopted, and Messrs. Walsh, Dobbin and Worthington were appointed the Committee:

Resolved, That the Senators and Representatives in Congress from this State be and they are hereby requested to urge upon the National Executive the propriety of opening negotiations with the Peruvian Government, for the purpose of having the restrictions at present existing removed from the trade in guano, an article becoming of such great importance to the farmers of this country, and that a committee be appointed on the part of the Maryland State Agricultural Society to co-operate with the Congressional delegation.

What a change, as here indicated, has come o'er the spirit of their dreams, among Maryland farmers since 1824! In that year, the editor of the Plough, the Loom, and the Anvil (still toiling for the same interest, but not then, as

now, looking exclusively to the fruits of his labours in the cause for his own subsistence), distributed in Maryland two barrels of guano, received directly from the Pacific, and with the substance itself, sent out translations from Ulloa and from Humboldt, as to its nature and uses.*

The following is the description of this manure, received and distributed with the substance by Mr. Skinner twenty-six years ago. We give it as a piece of agricultural history which may possess some interest for the young reader of the present day.

This substance, to which the naturally sterile coasts of Peru owe their fertility, had already been partially described by Don Ulloa. Messrs. Humboldt and Bonpland have, however, more recently, by communicating specimens of it to Fourcroy and Vauquelin, furnished an opportunity of becoming satisfactorily acquainted with its nature. The analysis of it, made by the latter named chemists, and which is detailed in the 56th vol. of the *Annales de Chimie*, gave the following result:—

- 1st. A fourth part in weight of uric acid, partly saturated with ammonia.
- 2d. Oxalic acid, partly combined with ammonia and potash.
- 3d. Phosphoric acid, united to the same bases, and to lime.
- 4th. Small proportions of the sulphates and muriates of potash and ammonia.
- 5th. A small proportion of fatty matter.
- 6th. Small proportions of silicious and ferruginous sands.

In Rees's Cyclopaedia, the guano is described as a yellowish-brown earthy substance, *without taste*, and of a smell resembling that of castoreum.—The specimen furnished by Midshipman Bland has a *saline taste*, and a slight castoreum odour.—Exposed to the fire, it blackens and emits strong ammoniacal fumes, as observed by Sir H. Davy.

It is found in strata of from 50 to 60 feet in thickness, which are worked on the surface, in the same manner as iron ochre mines. The island of Chinche, near Pisco, on the more southern coast of Peru (nowhere, however, observes Mr. Humboldt, but between the 13th and 21st degrees of S. lat.), and the small islands of Ilo, Isa, and Arica, furnish it in abundance. These islands are visited by immense flocks of birds, principally of the heron and flamingo genus (*Ardea* & *Phanicopterus*.—Cuv.), that tarry there through the night. Hence the guano has been considered as produced entirely by them; but it can scarcely be possible that such immense strata should have been accumulated in that way alone. The question then suggested by Mr. Humboldt, is whether the guano might not be considered as the product of one of the revolutions of the earth, and classed with the formations of coal, and fossil wood? Mr. Guido Ricci has consequently proposed to give it a place in our mineralogical systems, under the name of *Ammoniaque Uratée*, (Urate of Ammonia,) or at least to consider it as a natural product.

From the composition of the guano, it is easy to conclude its fertilizing properties, and it must be judged to be a powerful manure. Sir H. Davy observes that it requires water for the solution of its soluble matter to enable it to produce its full beneficial effect on crops. Its principal application is to corn; but it must be used in small quantities, its causticity being fatal to the roots of the plant, when used too freely.

Messrs. Humboldt and Bonpland, to whom, as before observed, we have been indebted for the means of ascertaining its value, further remark:—that the inhabitants of Chancay, engaged in the transportation of this manure, perform the voyage to and from Chinche, in twenty days, in boats called *Guaneros*. Each boat containing from fifteen hundred to two thousand cubic feet of guano.—The price of the vanega, (1 3-5 bushel) at Chancay, is four francs (80 cents); at Arica, 15 francs (\$3); making it, as may be perceived, a very profitable business. It is said that the strong ammoniacal smell which the guano emits would cause those unaccustomed to its neighbourhood to be incessantly sneezing.

It may be here observed, that the dung of pigeons, and of other birds, which bears

* Dr. Lindley, the highest authority, recommends that, when applied for gardening purposes, "you should not use less than 3 cwt. an acre; it should be mixed with four or five times its bulk of earth, and applied in wet weather, or with water, when crops are beginning to grow. The same strength will do for Geraniums, &c., in pots; it should be applied occasionally, till their rapid growth shows that it is beginning to tell, and then be discontinued. All liquid manure should be used very weak, and applied in the same manner.—This substance [guano] proves injurious to the vegetation of kitchen-garden seeds if they come in contact with it unmixed. It is best to mix it well with a quantity of good soil, and then dig it in as if it were common manure, immediately before the crops are sown or planted. For asparagus it will be best mixed with water, and applied at intervals during the growing season." And for tobacco or corn, it may be thus mixed and sowed broad cast, and ploughed in.

much analogy to the guano, is known to form a very valuable manure. Hence, in France, it has been proposed to use, for the same effect, those immense accumulations of bat dung, which occur in the extensive caves of the Department of Yonne.—In this country, the soil under the woods, where great flocks of the wild pigeons roost, must be highly impregnated with their dung, and would no doubt, form an excellent manure.

It received then but a passing notice, however, although there was a spirit of agricultural improvement, as active then as now. And why is it, then, the reader will say, that the average acreable product throughout these States has not increased in this lapse of a quarter of a century? No man living has asked himself that question oftener or more anxiously than the writer; and the conclusion to which he has arrived with confidence is, that it is because of the *fluctuating policy* and the “free trade” delusion, otherwise properly called by General Jackson, subjection to the policy of British merchants, which keeps other countries from protecting their own labour and developing their own resources—which, in a word, tends to keep men wide asunder; to prevent their combination; and thus, while it undermines the prosperity of all other industries, thereby destroys or prevents the prosperity of agriculture itself. In a word, that baneful policy which keeps the loom and the anvil far asunder from the plough, forcing us to go abroad for cloth and iron manufactured for monopolists of lordly wealth, by starving operatives, instead of being manufactured here, near to the planter and farmer, out of our own abundant materials, by free and thriving men and women who would be able and willing customers to the planter and farmer. To return to the history of our use of guano. It received, when distributed in 1824, as before said, but a passing notice; was said to be most powerful when applied to Indian corn; but there the matter was dropped until it was used and recommended on the experience of *English farmers* about ten years ago—sixteen years after an ample opportunity had been presented to test it in Maryland, with authentic accounts of its virtue and uses. Generally, the easy cry is, “Oh! don’t tell us about English machinery, English grasses, and English processes and practice. They won’t suit our country—our climate is so different.” And this is the convenient excuse of many who never so far studied the climate of either country as to be able to tell the average medium temperature or fall of water in the one or the other. Now, however, it seems that guano can’t be had fast enough, either there or here.

In England, by a parliamentary return, printed by order of the House of Commons, the importations of guano into the United Kingdom for the last nine years were as follows:—

1841.	1842.	1843.	1844.	1845.	1846.	1848.	1849.
2,881 tons.	20,398.	3,002.	104,251.	283,300.	89,392.	71,414.	83,438.”

☞ Quere? we wonder when we shall see the representatives of the cultivators of the soil in our “House of Commons” instituting such inquiries and publishing such returns? Can any of them tell—do any of them ask for—the quantity of guano imported, and the duty paid on it? or the quantity of madder, or woad, or liquorice, and other things that we might raise if properly encouraged, as we might make all our wine and all our silk, instead of importing, not these only, but beef and flour, in the shape of coal and iron, to be laid down through the coal and iron regions of Maryland and Virginia! Ah, we are a glorious—a wise people! ready, we cultivators of the soil, to go in a body *before* the election, to command that respect which our numbers and influence entitle us to expect at the hands of “our servants”(?) Yes, before the election. But how *at* the election?

There is, in fact, proof that the fertilizing properties of guano were known more than two hundred years ago; and the slowness with which the use of it has spread over the world only adds another to the thousand proofs of the

want of that *appropriate education*, on the necessity for which we published *numerous elaborate* and exceedingly well-prepared essays *thirty-years ago*; and the effect of which education would have been that agriculture would ere now have become sure enough, what it is sometimes called—a “profession.”

That guano was thus known in Europe more than two centuries ago, is proved by the following curious passage from “the first book of the art of metals, &c., written in Spanish, by Alvarado Alonzo Barba, Master of Art, Curate of St. Bernard’s Church, in the imperial city of Potosi, in the kingdom of Peru, in the year 1640. Done into English in the year 1669.”

“Out of the islands in the South Sea, not far from the city of Arica, they fetch earth, that does the same effect as the last-mentioned. It is called guano (*i. e.* dung), not because it is the dung of sea-fowls, as many would have it understood,” (rather out there, Master Alonzo Barba), “but because of its admirable virtue in making ploughed ground fertile. It is light and spongy; and that which is brought from the island of Iqueque is of a dark-gray colour, like unto tobacco ground small, although from other islands nearer Arica they get a white earth, inclining to a sallow, of the same virtue; it instantly colours water whereunto it is put, as if it were the best ley, and smells very strong. The qualities and virtues of this, and of many other simples of the new world, are a large field for ingenious persons to discourse philosophically upon, when they shall bend their minds more to the searching out of truth than riches.”

Ay, *when*, sure enough, will that time come? Is not California doing now for us what the gold mines of Peru did for Spain? drawing off labour from more useful channels, disturbing the minds of the people with dreams of enormous accumulation, generating contempt for the duller pursuits of sober industry, and sowing broadcast the spirit of speculation and the seeds of national corruption, threatening already the very existence of the Union!

Having given the analysis of guano twenty-six years ago, by two distinguished French chemists, it may be well here to add, once for all, the more modern analyses by Professors Ure and Johnson:—

“GUANO.—Dr. Ure’s analysis of a first rate Bolivian guano, and of Chincha guano from Peru, respectively give the following results:—

	Bolivian.	Peruvian.
Per centage of ammonia	15.244	16.25
Phosphate of lime, magnesia	26.5	22.5
Water	6.5	10

Professor Johnson gives the following account of guanos:—

Variety.	Water, per cent. from	Organic Matter, from	Phosphates, from
Bolivian	5 to 7	56 to 64	25 to 29
Peruvian	7—10	56—66	16—23
Chilian	10—13	50—56	22—30
Ichaboe	18—26	36—44	21—29
Saldanha Bay	17—34	14—22	45—56
Patagonian	14—40	16—38	17—40

The following is the average of 32 specimens of Peruvian guano, very recently analysed by Professor Way, in England.

	Per cent.
Water	13.09
Organic matter and salts of ammonia	52.61
Sand	1.54
Earthy phosphates	24.12
Alkaline salts	8.78
	100.14

The organic matter named above contains ammonia corresponding to a per centage of 17.41 in the guano.

But to return to the proceedings of the Maryland State Agricultural Society:—

"Mr. J. T. Earle offered the following, which was read and unanimously adopted:—

"*Resolved*, That the response made to the Appeal from this Society to the agriculturists of other States, to aid in the formation of a Central Agricultural Society for the Middle Atlantic States, is in a high degree gratifying; and we urgently invite the attendance of all interested in the pursuit of agriculture, to assist at our next annual meeting and exhibition, in October, to carry into effect the objects contemplated in said Appeal.

"Various other matters of interest were attended to, the report of which, together with the premium list, will be published by the Secretary in the next No. of the American Farmer.

"The day for the annual meeting of the Society was fixed for the evening of Tuesday, the 22d October, and the exhibition to commence on Wednesday, the 23d, and continue three days."

When the list appears, we may be tempted to review it for general purposes, and in a spirit of good-will and anxiety for the beneficial results of all movements made for the welfare of agriculture in that good old State, from which inexorable necessity only could have driven us, to seek that support, which after thirty years of untiring devotion to the landed interest, we could not find within her borders. That it was not from any disinclination to labour, we refer to the article in this number headed "*CONFABULATION*, between his patrons and the editor of the *Plough, the Loom and the Anvil*," where it will be seen and proved, that before he has a picayune left for himself, he has to earn and pay away about \$5000 a year!

TO MAKE A CEMENT,

THAT WILL SET UNDER WATER, AND, IN A FEW YEARS, BECOME HARDER
THAN STONE.

LIMESTONE of a deep blue colour, is to be procured, and pit coal to burn it with, in the common manner.

When the lime is withdrawn from the kiln, the coal ashes are taken out with it, and all the sizeable pieces of lime being picked out, there remain the coal ashes, mixed with about one-fourth its weight in lime dust.

About a bushel of these materials is put into any suitable vessel, sprinkled with water just sufficient to slack the lime. Another bushel is then heated in the same way, and so on until the vessel is filled. In this state it can be kept for any length of time in a moist place, protected from frost and sun.

A strong open trough, containing about two cubic feet, is two-thirds filled with the cement in the above state; and with a small iron pestle suspended at the end of an elastic pole, is well beaten for about a half an hour. At the end of this time it becomes of the consistence of soft mortar, and is then laid in the shade, from three to six days, according to the dryness of the air. When sufficiently dry, it is again beaten half an hour as before, and the oftener it is beaten the better will be the cement: ten times, however, are in general sufficient to reduce it to the consistence of a smooth uniform paste. After this period, it is apt to become refractory on account of the evaporation, as no more water is to enter the composition of the cement than what was at first employed to slack the lime.

Thus prepared, it is to be used as common mortar; and is found to possess the singular advantage of uniting, in a few minutes, so firmly to the bricks or stone, that still water may be immediately let in upon the work without any inconvenience; and, by keeping it dry for a single day, it has afterwards nothing to fear from the most rapid current.

FOR PRESERVING EGGS.

IN March put about half a pound of quicklime in a stone or earthen pot, and add a gallon of cold water; next day fill the pot with new eggs, tie a paper over it, and put the pot in a cool place. The eggs will be found perfectly good after being kept a year.

GARRETT'S HORSE-HOE AGAIN.

NONE can well be more aware than we, of the unsuitableness of much of the costly and complicated agricultural machinery of England, to common use in this country, where much more than in England agricultural improvement is retarded for the want of capital. That is the case in fact over all the world, but eminently so with us, where land is of all things the cheapest and most abundant; bad enough, Heaven knows, before, but now since the conquest and annexation of Texas and other Mexican territory, much worse. Nevertheless, it is far from being true, that therefore, or any how, we should not be made familiar with the structure and uses of implements, however costly, which are pronounced by men of the soundest judgment, to be indispensable to success; and that in a country, as we have before said, where thirty bushels of wheat to the acre is as common as half that crop in the United States.

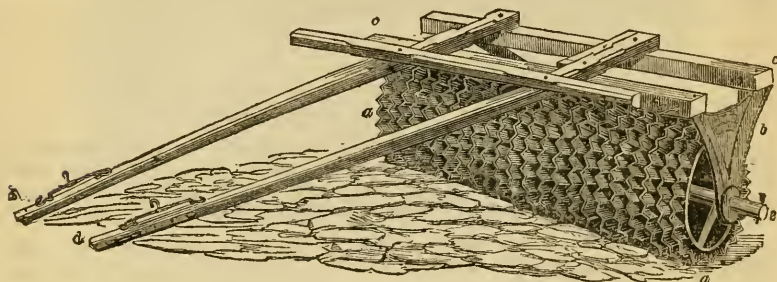
The same objection if any, that may be made to a notice and exemplification of the English horse-hoe, and its uses and effects, might have been made to the same sort of notice of the English *drill machine*. Who would ever think of recommending that cumbrous and expensive contrivance to practical use in this country? Yet are we the less indebted to those who supplied the first machine or model, to be improved upon by Yankee ingenuity? And why may not the horse-hoe be improved in like manner? Will any one say, that it would not be attended with the best results, (if it can be done,) to *cultivate* our wheat crops, not only for the free admission of air and moisture to the roots, but to the extirpation of the grass and weeds, with which almost every wheat field is now infested, at the expense and robbery of the staple crop, to the extent of nourishment yielded to all extraneous growth? Why not if we could, (as in England they *do*, with the drill horse-hoe,) cultivate and keep clean our small grain, as well as our Indian corn and root and tobacco crops? No! with our farmers the danger is, not that they will be heedlessly led into impracticable and extravagant experiments in the practice of their art, but that they will be too unenterprising and indolent, to adopt such as have been *proved to be eminently economical and efficient!* Take for an example, the very simple and very efficient contrivance, invented by Mr. Gray, of Virginia, and so strongly recommended by the experience of Judge Carmichael, of Queen Anne's, Maryland. We mean the *drag-log for pulverizing the soil*; so simple, that any one could make it who can handle an axe and an augur; and more efficacious as we know, than any roller for the same purpose; yet out of the many thousands of farmers who have read of it, and who doubt not the truth of what is said of it, how many have ever gone to the trouble of having one made, though it need not cost them *one dollar*? Are there two dozen, are there *two* to be procured in any county in Maryland? Now in place of this cheap and simple implement, consisting of a log of twelve or fourteen inches square, and four or five feet long, with a common cart tongue pinned down at right angles on the *top* of it, we might recommend the famous English "*clod-crusher*," Crosskill's, made after the following fashion, and what then? Why the cry would be raised, "how foolish it is to be giving us the form of such costly things, so far beyond our means!" and this very cry would be raised by those, who have not the spirit to bring into use a *drag-log*, that could be made by any field hand of common sense, in one day at most. Let us only then repeat, that in calling attention to the English horse-hoe, so much in use, and considered so invaluable, by the best farmers in England, our intention was to present it as a matter worthy of attention, and

as an implement that is probably as susceptible of being simplified, improved and adapted to use in this country, as the English drill has been; *and moreover*, ~~we~~ we do confess to an ambition, that would lead us to assist in gratifying that desire, which we are prone to apprehend exists on the part of *such readers as ours*, to be made familiar with whatever is connected with, and considered accessory to the progress of agricultural improvement in other countries, even though it be not exactly adapted *per se* to our own.

CROSSKILL'S CLOD-CRUSHING ROLLER.

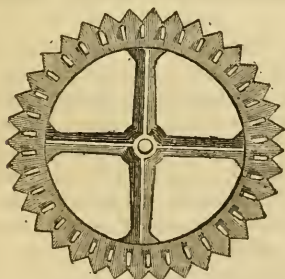
"Crosskill's *clod-crushing roller* is one of the most efficient implements of this class, and is here represented in fig. 1, which is a view of the machine in the working state; but

Fig. 1.



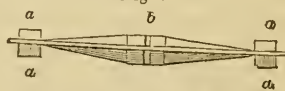
to convey any idea of its construction we must exhibit it somewhat in detail. With this view, fig. 2 is a side elevation of one of the individual wheels or plates that go to form the body of the roller, and consists of a ring or web of 30 inches diameter over the extreme points; the web is $2\frac{1}{2}$ inches broad and $\frac{3}{8}$ inch thick, formed into angular-pointed

Fig. 2.



SIDE VIEW OF ONE WHEEL OF THE CLOD-CRUSHER.

Fig. 3.



EDGE VIEW OF THE WHEEL.

teeth. The ring is supported on the four feathered arms, and an eye formed in the centre 3 inches in depth and $2\frac{1}{2}$ inches diameter, fitted to move easily on the axle of the roller. Corresponding to each tooth of the wheel, studs are cast on each side of the web, which project 1 inch from it, as seen in fig. 3, an edge view of the wheel, where *a a a* are the projecting studs, and *b* the eye, showing also the feathers of the arms. The wheels thus formed are threaded, to the number of 28, upon a round axle, $2\frac{1}{2}$ inches diameter, upon which they are at liberty to turn separately, making up the body of the roller *a*, fig. 1, to a length of 6 feet. A cast-iron end-frame *b* is then placed on each end of the axle, and these are bolted to the wooden transverse bars *c c*, and to these last also the horse-shafts *d d* are bolted. The axle is prolonged at each end *e* to an extent of 4 or 5 inches, forming the arm on which the carriage-wheels are placed for the removal of the roller from one field to another. The carriage-wheels are also of cast iron, 3 feet diameter, plain of course on the sole; and when these are to be placed or removed, a hole is dug in the soil under each wheel, until the wheel turns freely round and can be moved on or off the axle, the roller then resting on the ground; but when the carriage-wheels are shipt on the axle and brought on level ground, the whole

weight is borne by them, while the body is 3 inches clear of the surface. In this state it is traveled from field to field, and, when about to be worked, the carriage-wheels are removed by the process just described.

"The effect of such a roller upon rough clay land may be easily conceived, and that where such a great number of *points* are brought into contact with the indurated clods, the result must be their reduction to a state approaching to the granular, especially if the operation is repeated. The effect is entirely different from that of the plain roller, for with it, if a clod does not crumble at once with its pressure, it is forced downward into the soil in a still solid state; whereas, with the one now described, the numerous points, acting like so many wedges, will almost infallibly split such a clod into numerous fragments, and repetitions of the process will produce a well pulverized surface."

We don't recommend the above, mind, for imitation and use in this country, but to let the curious reader see what is fashionable in other countries, and to make of it any other use that his ingenuity may suggest.

GUANO.

In the "*London Gardeners' Chronicle*" it is recommended,

"Before applying guano as a top-dressing to a lawn, mix it with six or seven times its bulk of ashes, peat, or soil of some kind, or it will burn the grass; and for this reason it should be applied in wet weather. Scatter it over the grass at the rate of 4 cwt. to the acre. Use clear soot-water once a week, and liquid guano once every six weeks."

Of course the same precaution should be observed when used as a top-dressing for anything else. When applied to Indian corn in the hill, care must be taken to place it near, but not in actual contact with the corn. This, however, must be a tedious process: we would recommend that farmers who desire to use it with corn and tobacco, should contrive to obtain a drill, such as is common in England, for distributing artificial manures, and so apply it just before planting. In the mean time, however, let the guano be mixed with slaked ashes or mould, and applied to the hill to prevent its coming in too direct contact with the plant.

We see no good reason why Indian corn and tobacco should not be cultivated in drill form (having the same number of plants on an acre) as well as turnips and mangold-wurzel, carrots, &c. The late FREDERICK SKINNER, of Calvert county, Maryland, was the first to dispense with *hills* for tobacco; ploughing deep, putting the land in fine tilth, and planting by a simple marking machine on a smooth surface. And, here, it is no more than is due, from the son to the father, and, assuredly, none the less, that he was a father that any son might be proud of, to say that he remembers no case of an improved implement, no artificial manure, no new labour-saving contrivance or process, in that county, that was not invented or introduced by him.

Young, we are aware, says, in his "*Night Thoughts*," as to biographical notices of departed excellence:—

"Who writes to share the fame of the deceased,
So high in merit, and to him so dear!
Such dwell on praises which they think they share."

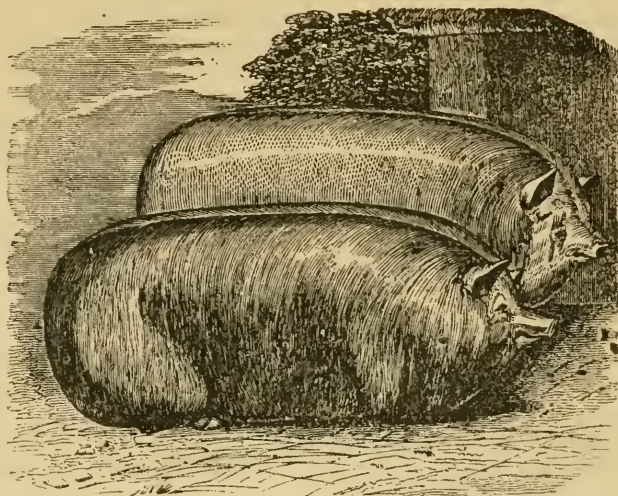
Submitting to encounter the suspicion, for our own part, we only wish we could claim a share of his excellence of character, and his mechanical genius, as we do claim to have inherited his fondness for agriculture, his thirst for knowledge, and his love of truth—in respect to which last, let us quote again, for our young readers:—

"More worth is she than pearls, therefore seek her carefully: the emerald and the sapphire and the ruby are as dirt beneath her feet; therefore pursue her manfully.

"The way to her is labour; attention is the pilot that must conduct thee into her ports. But weary not in the way, for, when thou art arrived, the toil shall be to thee for pleasure."

For the use of guano, see other notices in this number.

MIDDLESEX PIGS.



THE portraits of fat pigs, which are here presented, represent what is known among swine-breeders and connoisseurs in *hogology*, as the old *Middlesex breed of pigs*. When it is considered how necessary and how easy it is to modify the shape and properties of the hog, to adapt them to the various circumstances and uses of their condition and carcass, one is ready to admit that there is no longer much occasion to select the hog as an object of premium, much less as an animal to be amended by importation. We have ourselves imported and had sent to us, again and again, from old England and New England, the best of the various breeds, and yet no one of them was adapted to all the various parts of our country, and to the very different modes of feeding and fattening, cooking and using them.

How would the obese, short-legged, lazy grunter of New-England get along in the South, running for his living from one acorn or persimmon-tree to another, as many miles in a day as a mail-carrier, leading, like a poor editor, an ever-anxious and precarious existence, living on roots and nuts, as he can find them, and without which good *bacon* is not to be expected?

We saw in the streets of Washington, a few days since, a black sow that would net about 150 pounds, that for good-sized, well-proportioned head, square frame, round body, large ham and bone of middling size, we would as soon take to breed from as any hog that could be imported from the piggeries of the Dukes of Woburn or Essex, in England.

But the pigs that embellish, if it be an embellishment, this number, may be pronounced a true likeness of one, nicely dressed and exhibited, about the "ides of March" last, in the hall or entry of the National Hotel at Washington. Those who saw *that* pig, will at once recognise the resemblance. This little-boned, short-legged race, would appear to suit our Yankee friends, to make what they call "pickled pork," which the southern traveller finds, baked with beans, and so nicely served up at the genteel, quiet, charming and luxurious table of the Tremont House, so well kept by Mr. Tucker, in Boston. But we confess to thinking it even nicer still when it seasons a

dish of lady-pea soup! one of the most palatable dishes to be met with "in a month of Sundays."

The specimen of this breed, to which we have referred as having graced the larder of the National Hotel, was as fat as any opossum that ever was shook from the persimmon tree by old King CYRUS, or Hanover, or any other one of the old family servants in the South, God bless them, who, if you observe them, you may so often see

—————"of a shiny night,
At the season o' the year"

when grapes and persimmons are ripe, throw an axe in the bend of the left elbow, and with a sly whistle to an old half-hound coon dog, steal off quietly in quest of game, that if it escape them, must be "as cunning as a fox." We speak from lively reminiscences of youthful participation and enjoyment of the sport, especially when it ended in a good hard fight with an old swamp-bred coon; than which no animal on earth or *in the water* makes a more gallant defence of his life. But to return to our *Middlesex pigs*.

Here is an account of three of this breed which lately took the premium of a silver medal at Smithfield, London, as the best pigs in class 18. Their breeder, Mr. W. Mills Barker, took for them also the gold medal for the *best pigs in the show*.

The American swine-breeder may be gratified with a view of the particulars, and they may serve as a standard of comparison for those to which premiums are awarded by our Societies.

"These pigs were farrowed on the 18th June, 1848, and were fed, from five weeks' old, on middlings, boiled potatoes, and peas up to eleven weeks old, when they had barley and pea-meal, and boiled potatoes, mixed with water. They consumed, in thirteen weeks, twenty-eight bushels of meal and four bushels of potatoes. They were tried on milk, but did not thrive so well on it as on water. In consequence of their great propensity to fatten, they were blind with fat at sixteen weeks old, and when exhibited their eyes were buried two inches in fat, which came over their forehead, and lay on the top of their noses full three inches.

"The following is a statement of the weight and age of the three while fattening:—

Stones weight of each (8 lbs. to the stone).

Date.	Weeks Old.	Stones weight of each (8 lbs. to the stone).		
		First.	Second.	Third.
July 23,	5	3	3	2½
August 13,	8	6½	5½	5
September 3,	11	10	9	8
Ditto 24,	14	13	12	11
October 51,	17	19	18	17
November 5,	20	25	24	24
Ditto 26,	23	29	28	28
December 6,	24 and 3 days	29*	28	28

"This breed of pigs has been very much improved by Mr. Barker (the exhibitor) in the last seven years. They are of a pure white colour, of great substance and propensity to fatten. They keep in excellent condition while stored on grass, turnips, offal from the barns or garden; and when put up to fat in two or three weeks make excellent porkers. They are fine in the bone and head; small upright ears, which point a little forward. They are of a small size, have good litters, varying from seven to fourteen in number, being very fat while sucking, and thus making very good roasters."

The reader will not fail to note the proof of early maturity to be seen in the fact, that all of them ceased to grow a single pound after the 23d week, when they were not quite six months old.

* 222 pounds at near six months.

ALDERNEY OR JERSEY CATTLE.

FAMILIAR as we have been made, by more than thirty years of perusal of the writings and observations of judicious men, at home and abroad, in respect to the qualities and the improvements which have been made in the various races of domestic animals, and difficult as it would be, therefore, to find anything, in what *has* been written, new for ourselves, we are not to forget that our office is to cater for *young farmers*, just coming on the stage, and laudably anxious, as we would fain hope all young farmers are, for useful information, and not the less useful (whatever indolence and ignorance may suggest to the contrary) for having been committed to paper and printed in a book, and therefore constituting, what fools only deride "*book knowledge*."

Hence it is, that in the forthcoming volume, which opens with the next number of "*The Plough, the Loom, and the Anvil*," we engage to give the most reliable information, in regard to the form and properties of the various races of animals known in foreign countries, with brief historical notices of the introduction of such as have been imported into this country—as, for instance, O'Donnell's, Patterson's, Gough's, Parkinson's, Spriggs's, Creighton's, Skinner's, and others, into Maryland; the Holstein, Alderney, Irish, Dutch, Flemish, Brittany, polled and short-horn breeds, brought into Pennsylvania by Messrs. Sims, Cunningham, Ross, Waln, Hamilton, Ketland, Guest, Massey, and Wurt; the cattle imported into New York by Col. Deveau and Mr. Heaton, General Van Ransselle, Mr. Vail, Mr. Corning, Mr. Prentice and others; the Leicester, Lancashire, short-horn and Hereford, taken to Connecticut, Kentucky, Massachusetts, New Jersey and Main by Messrs. Wadsworth, Stewart, Edgar, Vaughan, Sanders, Clay, and others. For the present, we shall send to the printer some items at hand that relate to the *Alderneys*.

To them our attention happens to be attracted at the moment by observing in the "*Mark Lane Express*," of the 15th of April, that at a late meeting of the Royal Agricultural Society,

"Colonel Le Couteur, Aide-de-Camp to the Queen and Viscount of the island of Jersey, presented to the Council lithographic impressions from two beautiful drawings, made by himself, of a bull and a cow of the Jersey breed, on which were marked the "scale of points," approved by the Royal Agricultural Society of Jersey at their general annual meeting in January last, as constituting perfection in their peculiar and well-known breed of dairy cattle, and as furnishing to their judges a simple and definite process for arriving at satisfactory conclusions in making their awards. Col. Le Couteur entered into a detailed and very interesting statement of the character of animals in which any one or more points specified in this scale were more than usually developed. The drawings then laid before the Council were not portraits of any particular bull or cow of the Jersey breed, but represented an ideal assemblage of individual excellences occurring in different animals, and selected from the finest cattle on the island, collected together at Col. Le Couteur's farm for the express purpose in view, and carefully submitted to the inspection and comparison of the gentlemen who formed the special committee appointed by the Jersey Society to revise the 'points' of their stock. Col. Le Couteur, in detailing the points thus agreed to by the committee, called the particular attention of the Council to some of those points found to be most intimately connected with the natural excellence of the animals and the characteristic peculiarities of the Jersey breed, of which the island in Col. Le Couteur's opinion, at that time contained some of as perfect specimens as could well be conceived. He remarked that the cows which had the inside of the ear tinged with a deep yellow colour were invariably found to yield butter of a rich orange colour, while those with ears of a lighter tint furnished butter of a correspondingly inferior quality, and of a paler hue. In the finest stock, too, the eye of the cow was soft and placid, while that of the bull was lively and full of fire. The 'action' of Jersey cattle also indicated, not only their muscular power and their mode of employing it, but that general conformation and adaptation of parts which constituted excellence: a finely

bred Jersey animal, Col. Le Couteur remarked, ought to walk off the ground like a race-horse. By means of this determination of a standard scale of points, the labour and responsibility of the judges were much reduced, while their decisions almost invariably gave satisfaction; as, in the case of any difference of opinion, a third party being called in, the award was at once decided. During the ten years that he had acted as secretary to the Royal Jersey Agricultural Society, he had never known the occurrence of an absolute case of dissatisfaction. Colonel Le Couteur, in reply to further inquiries, admitted that, at the present time, many animals were easily passed off as of the true Jersey breed, especially those of black, or black and white colour, from Normandy, and others from Brittany, which were very inferior, as dairy stock, to the genuine animals of that breed. The chairman wished to know how the term 'Alderney' had been generally applied in England to the Channel Islands' cattle, and whether the animals of that island possessed advantages over those of Jersey or Guernsey. Colonel Le Couteur said that, on the contrary, there was at the present time scarcely an animal in Alderney that he would think worth purchasing. He explained that that island had belonged to his great grandfather, who introduced into it a great number of the Jersey cattle, which, however, from the inferiority of the pasture, soon deteriorated from the original stock. Colonel Le Couteur, Mr. Parkins, and Mr. French Burke then cited particular instances of the great amount of butter yielded by dairy cows, during the flush of grass in May and June, or throughout the year, if fed in a particular way, and tended with great care, namely, 16lbs. a weeks in those months, or 1lb. a day in other cases during the year. Colonel Le Couteur then expressed the great pleasure it would at all times give to himself, as one of the Governors of the Royal Agricultural Society of England (or to his successor in the office of Secretary to the Royal Agricultural Society of Jersey), to receive applications from any of its members who require advice and aid in obtaining the best dairy animals which that island could produce. He had last year the satisfaction of freighting a vessel with thirty-three head of such stock, to a gentleman residing in Scotland, which arrived in perfect safety, and maintained the high character of the Jersey breed. The chairman referred to a challenge given by Mr. Villebois, one of the governors of the society, to the county of Bucks, in which he resided, in favour of two of his dairy cows of the Channel Islands' breed, which had produced him both milk and butter of almost unexampled quantity and quality."

All who are familiar with such portions of English agricultural annuals as treat of Cattle, must be aware of Colonel Le Couteur's high character as an agriculturist, and that his liberality corresponds with his knowledge. In respect of the race of Cattle in question, for practical knowledge and authority he may be considered, as to them, what Collins was in reference to the short-horns, and Bakewell to the Dishley sheep.

It was by Col. Le Couteur, whose obliging agency was procured through General Devereux, that the last cow imported by Mr. R. S. Colt, Esq., of Paterson, was selected. We saw her when she was landed, and regarded her as decidedly the best-looking animal of the breed we had ever seen, and we once owned some of the best which had at that time been brought into Maryland. In no breed of animals has the form been more improved than in this, as may be seen by contrasting specimens of the old and the modern form, as illustrated by diagrams in the first volume of the *Plough, the Loom, and the Anvil*.

Within a few days we derived, by letter, some particulars as to the growth and promise of Mr. Colt's herd, (probably the most numerous and best selected now in the country), which would have interested the reader, but the letter, we regret to say, has been mislaid for the moment. The cost and charges of the cow lately selected and sent out by Col. Le Couteur was, if we rightly remember, \$160. The great obstacle, by the by, to the repeated importations which are indispensable to maintain the excellence of improved breeds of animals, consists in the inability or unwillingness of American breeders to give remunerating prices for their progeny.

It sometimes gratifies curiosity at least, to look back and see what one has been doing in his own humble way to promote certain industrial interests. Happy for those, if any, whose retrospects present no subjects for contrition! Just thirty years gone by, on this very subject, did the Editor of the *Plough*,

the Loom, and the Anvil, thus discourse to some thousand readers, in the old American Farmer, that being the first, and then the only agricultural journal in existence in the United States:—

“Among the various subjects discussed in this journal, we perceive with regret that the importance of paying more attention to the improvement of *milk cows*, has not been sufficiently insisted upon—for, in the various breeds of cattle, there is as much difference as in the several breeds of horses, dogs, or any other animal. The hound and the spaniel differ little more in form and constitutional habits, and propensities, than did the PENNSYLVANIA OX, and the MARYLAND HEIFER, lately killed in this market.

“From this inattention to breed, we often see that half a dozen of the bad milkers, with which our farms are overstocked, positively yield less than *one good cow*, whose propensities are *to the pail*, in whom nature converts all her aliment into milk. But this is not all; for no fact is better established than that the milk of one breed of cattle will yield double as much *butter* as that of another—both being fed and treated in precisely the same manner.

“So well is the choice of blood understood in England, that the famous breeder, Mr. Bakewell, hires his bulls for from five to thirty guineas each, for the season, *according to their form*; and his bull Twopenny covered at five guineas each cow.—His stock is preferred for the butcher, because of its propensity to fatten quickly, and from its carrying its weight in the most valuable parts of the body*—but for *richness of milk and proportionate quantity of butter*, none, it is said, can be compared with the ALDERNEY Cow. Having heard and read of the extraordinary richness of the Alderney’s milk, a few days since we improved an opportunity which was very politely offered us, to judge *for ourselves*—we saw the Alderney and other cows milked†—examined and compared each at different periods after milking; and we are firmly persuaded that the Alderney milk taken in the morning and divested of the cream at 2 P. M. is then richer than the milk of the common cow, when first drawn—it may be distinguished in the pail or the dairy, with half an eye, by its rich *yellow colour*, which passes through the cream and displays itself in the butter. The most transient observation of their superiority, in regard to the quality of their milk, must serve to convince those who keep a single cow for family use, as well as those whose pride is to sell the best butter in the market, that no time should be lost in providing themselves with this invaluable breed of cattle.”

In 1819, Reuben Haines thus speaks of an Alderney cow, imported by M. and W. Wurtz in 1815:—

“She is now five years and eight months old, and has had the following calves:—1st, a bull, 12th month, 15th, 1815, during her passage from England—2d, a heifer, 12th month, 3d, 1816—3d, a bull, 11th month 13th, 1817, and 4th, a heifer, 9th month 25th, 1818. All of which are in my possession, and likely to do well, and I hope will tend to improve the quality of the butter sent to our market, already justly celebrated.

“On the 17th of 10th month, 3 weeks after the last calving, we churned 10½ quarts of cream, collected from one week’s milk, which produced 8¾ pounds of the richest and yellowest butter I ever saw; and yesterday, at the end of 16 weeks, upon winter food (brewer’s grains and hay, with about one quart of Indian meal daily) we obtained 7¾ pounds from a week’s gathering, of which the following is a detailed statement:—

* While the Bakewell sheep hold their ground, under the names Bakewell, Leicester and Dishley, the Bakewell cattle have been superseded, justly, by the improved short-horn. The fault of the Bakewell cattle was laying their fat too exclusively on the external surface—nor did they come so early to maturity as the improved short-horn. General Ridgely had the Bakewell in perfection at HAMPTON, a seat rendered famous by its proprietor for enlarged and elegant hospitality.

† The place where this examination of milk was made was CLIFTON, the same to which Mr. Wirt refers in one of his letters, in Kennedy’s life of Wirt. It was then under the excellent management of the late HENRY THOMPSON, who was a great favourite with Mr. Wirt, as he was with all who had the taste to appreciate his fine sense, his cordial and unaffected hospitality, and other high and gentlemanlike qualities.

“It is not to say what will bring to the mind
The joys that are fled and the friends left behind.”

The few who survive to cherish fond reminiscences of the place and its owner—the good cheer and the lively joke with which we were wont to beguile there many a summer’s afternoon, will be glad to know that this beautiful seat has fallen into the hands of a gentleman whose disposition is in full correspondence with his ample means to embellish and improve it.

1819, 1st month,	9th,	evening,	4 quarts	1 half pint.
"	10th,	morning,	5 do.	1 do.
"	do	evening,	4 do.	1 do.
"	11th,	morning,	5 do.	2 do.
"	do.	evening,	4 do.	2 do.
"	12th,	morning,	5 do.	2 do.
"	do.	evening,	4 do.	2 do.
"	13th,	morning,	6 do.	
"	do.	evening,	4 do.	1 do.
"	14th,	morning,	5 do.	1 do.
"	do.	evening,	5 do.	
"	15th,	morning,	5 do.	1 do.
"	do.	evening,	4 do.	
"	16th,	morning,	4 do.	1 do.

Total, 67 quarts, 3 half pints of milk, yielded 8 quarts, 1 pint of cream, which made 7 $\frac{3}{4}$ lbs. full weight of butter, the quality of which the members will have an opportunity of judging at the annual dinner of the Society this afternoon.

Very respectfully,

REUBEN HAINES.

RICHARD PETERS, *President &c.*, Philadelphia, 1st mo. 19th, 1819.

Four years after he gives the following account of one of her calves :—

"I have now a full-bred Alderney cow, reared on my farm, that will be only four years old next harvest. She had her third calf on the first of last month, and on the nineteenth we made rather more than ten pounds of delicious butter from twelve quarts of her cream, obtained from fourteen milkings, that is, in one week. Her only food through the winter has been good hay and brewer's grains; the latter article well known to be useful in promoting the secretion of milk, but not increasing the quantity or improving the quality of butter. One remarkable property of the cream of the Alderney cow is the readiness with which it is converted into butter. The week in which we kept it separate, 'it came,' as the phrase is, in five minutes."

A NEW AND IMPORTANT RESOURCE OF NATIONAL INDUSTRY AND INDEPENDENCE.—AMERICAN STEEL.

THE United States have until a late period been entirely dependent on the iron mines of Northern Europe and the enterprise of English manufacturers, for every pound of cast steel which has been used within their limits.

The peculiar varieties of iron ore required for the manufacture of steel have hitherto been supposed to be found only in Northern Europe and India. From the former the iron is imported into England in the state of bar or malleable iron. A greater portion of it is there mixed with their own iron, which is inferior, and converted into steel, the quality of which is, of course, inferior to that produced solely from the imported iron. They in this way manage to make about five times as much *Swedish and Russian steel* as they had Swedish or Russian iron wherewith to make it.

It was for a long time supposed that there was no ore in this country suitable for the manufacture of steel, but the successful operations of the *Adirondac Iron and Steel Companies* for the last year or two, clearly show that they have ores which are every way suitable for the manufacture of a steel, pronounced, by some of the best judges in the country, to be *equal, if not superior*, to the best steel produced in England from any iron. These ores, too, exist in such immense bodies that they are more than sufficient to supply the whole United States for centuries to come, with a better article of steel than they now have. Nor is this superiority in quality owing to the method of converting the iron into steel, but rests entirely on the superior and peculiar quality of the ores of which the iron is made.

These ores are found in Essex county, New York, in the very heart of the

Adirondac Mountains, about forty miles west of Crown Point on Lake Champlain: there the enterprising proprietors, Archibald McIntyre, of Albany, Archibald Robertson, of Philadelphia, and the late David Henderson, of Jersey City, now own about one hundred thousand acres of land, all heavily timbered, and possessing unparalleled mineral resources.

The deposits of ore are all of the varieties of the "Black Magnetic Oxide of Iron," and are not exceeded in magnitude by any other known deposits. The predominant rock, and that in which the ore is contained, is the "Hypersthene Rock," so called from the Hypersthene, of which it is principally composed, associated with large quantities of Labrador and common felspar, &c. For a particular description of the extent and quality of the ore, see Professor Emmons's Report on it in the Reports of the Natural History of New York, part 4, page 244, &c.

Contiguous to the Works are beds of limestone, common and fine clays, sand, veins of quartz, &c.; furnishing ample supply of these minerals. The works are erected on a water power of unlimited extent, and are surrounded by a dense and almost unbroken forest in every direction, which the company have secured for the purpose of supplying wood for charcoal. Indeed, nature has here brought in immediate contact and in unlimited quantities, ore, flux, fuel, motive power, fire and building material, &c.; everything that is necessary for the manufacture of iron on the largest scale.

The present works consist of blast and puddling furnaces, with all the necessary buildings, machinery, &c. A blast-furnace is now being erected, of large capacity, to meet the increasing demands for steel.

The Steel Works are situated in Jersey City, N. J., and were erected under the superintendence of Joseph Dixon, Esq., who has already gained for himself a high reputation amongst the first inventors of this country. The outlay on these works has been very great; but the company, composed of the proprietors of the Iron Works associated with Dudley S. Gregory, of Jersey City, have spared no expense to render them as complete as possible.

The numerous difficulties incident to the commencement of a manufacture both new and unknown in this country, have been by them met and overcome. So that they are now in successful operation, producing a cast steel of acknowledged superiority.

Nor is it necessary with their iron, as with the European, that it should be first brought into the malleable state before its conversion into steel, as they have succeeded in producing an article direct from the pig metal, of a quality equal, if not superior, to their other steel, which, when carried out, will produce a great saving in the expense of manufacture.

From the above views of this property, and the magnificent undertakings, we cannot but believe that it will eventually become of great national importance, and certainly deserves the patronage and hearty co-operation of every American—not only by all the countenance and preference that individuals can give, but by such legislation, in reference to this important element of national industry, not to say independence, as would secure it from being depressed by the poor and ill requited labour of European operatives—leaving in that case unused in the bowels of our mountains, rich deposits, placed there by a gracious Providence to be used, and used under a system of legislation that shall give fair play to labour, making of our government, for the masses, under our glorious constitution, a *practical* instead of a *theoretical* blessing.

We might say more about *steel*, its composition, &c., but we are already accused of a leaning towards manufacturers; while nobody doubts their usefulness to the farmer—to whom in fact, but to them, and to those who are not farmers, can he look as his customers? The question with the American

farmer is, whether these customers shall be far away, and so poor as to be unable to consume his products if he could get at them, or whether they shall be prosperous, here, close and thick around him in his own country. Our view is that of Mr. Jefferson in 1816, when he said to Mr. Austin—"It is time to place the manufacturer by the side of the Agriculturist." Does the support we get from manufacturers look like partiality on either side? Look at Pittsburgh—not a dozen subscribers.

We believe it was for a specimen of this American steel, that the first one of the CRESSON PREMIUMS was awarded by the Franklin Institute—we have much pleasure in recording the following conclusive testimony as to its quality, the excellence of which further and ample trial, has placed beyond all question.

PHILADELPHIA, May 1st, 1849.

DEAR SIR—It affords me great pleasure to say, that on a fair experiment with the American steel made at Jersey City by Messrs. Dixon & Co., the surgical instruments made therefrom possess as fine an edge and appearance as those manufactured from the best imported cast steel.

Respectfully yours,
PUGH MADEIRA,
Surgical Instrument maker,
37 South 8th St.

To A. ROBERTSON, Esq.

Following our propensity to hope and believe, that besides a mere knowledge that steel enters into the composition of various implements, the young farmer might be pleased to learn, in passing, something of its composition and characteristics, as distinguished from iron and other metals, we were going with the aid of our learned friend BRANDE, to gratify what ought to be esteemed a praiseworthy curiosity, but, on reflection, it might be objected to, as not enabling him to make one bushel more of potatoes, so we take leave only to recall a few lines of noble apostrophe to steel for its useful offices in Commerce, *Agriculture*, and War; hoping to be the more readily excused, as it is found in a *Botanical* work, by a great Philosopher, and, in our humble judgment, whatever may be said to the contrary, a great Poet.

Hail adamant Steel! magnetic Lord,
King of the prow, the *ploughshare*, and the sword!
True to the pole, by thee the pilot guides
His steady course amid the struggling tides!
Braves with broad sail th' immeasurable sea,
Cleaves the dark air, and asks no star but thee!

PRICES OF PROMINENT AGRICULTURAL STAPLES.

WE are at some loss to know whether our readers would not like to have the same space filled with other matter, looking to *newspapers* for prices. We would be glad, if possible, to hear their verdict.

Our standing authority for that great market is the "NEW YORK DRY GOODS REPORTER." The last number of that first rate paper, in all its departments, received before we went to press, says:—

COTTON.—The sales of the week aggregate 17,000 bales, showing great activity; but not, as we can learn, for actual consumption. This large amount has changed hands, nearly altogether, on speculation.

The stock here is to-day 130,000 bales; a very large amount; and it shows the firmness of holders that it should be so large without a decline.

The accounts relative to the new crop are beginning to come in unfavourably, and if they continue will have a powerful influence in sustaining the market. This new element in the calculation will work out a new result. It will necessitate a much greater reduction of the consumption, and will occasion the closing of many mills.

The Lowell manufacturers, we perceive, calculate on being able to work at their reduced rate, until October, with their present stocks. Another year of short crop would benefit no party. No amount of price would compensate.

The market closed firmly at the following quotations; at which holders are offering freely:—

	Atlantic ports.	Gulf ports.
Inferior	none,	none.
Ordinary low to good	11 $\frac{5}{8}$ a 21 $\frac{1}{8}$	11 $\frac{1}{2}$ a 12 $\frac{1}{2}$
Middling low to good	12 $\frac{1}{4}$ a 12 $\frac{5}{8}$	12 $\frac{1}{4}$ a 12 $\frac{3}{4}$
Middling fair to fair	12 $\frac{3}{4}$ a 13 $\frac{1}{8}$	13 $\frac{1}{4}$ a 13 $\frac{3}{4}$
Fully fair to good fair	13 $\frac{1}{4}$ a 12 $\frac{3}{4}$	— a 14
Good and fine	none,	none.

Flour.—Duty: 20 per cent. ad val.

There is rather more buoyancy in the market since the arrival of the Hibernia's advices, and the rapid advance in domestic. The sales of this description reach 1850 bbls. bonded at \$1 75 a \$1 81 $\frac{1}{4}$ for mixed brands; and 1100 bbls. free Sour at \$5. The stock in bond is about 31,000 bbls. The sales of domestic aggregate, 38,500 bbls. at \$4 37 $\frac{1}{2}$ a \$4 50 for fine; \$4 62 $\frac{1}{2}$ a \$4 81 $\frac{1}{4}$ for No. 2 superfine; \$5 18 $\frac{1}{4}$ a \$5 37 $\frac{1}{2}$.

GRAIN.—Duty: 20 per cent. ad val.

Our advices from the interior of the State confirm us in the belief that the stock of Wheat is only sufficient for the wants of the local consumption up to the next harvest, rendering it certain that the receipts at tidewater will be far below the wants of the trade.

Our quotations as corrected stand thus:—

Wheat, White Genesee	per bush.	1 35 a 1 37 $\frac{1}{2}$
do. Canada, (in bond)		1 02 a 1 12
do. Ohio		1 00 a 1 14
do. Red and Mixed W.		90 a 1 10
do. Southern		1 00 a 1 22
Rye, Northern		59 $\frac{1}{2}$ a —
Corn, round Yellow		62 $\frac{1}{2}$ a 64
do. do. White		63 a —
do. Southern, White		62 a 62 $\frac{1}{2}$
do. Southern, Yellow		64 a —
do. Western, Mixed		62 a 62 $\frac{1}{2}$
Barley, Western		63 a 65
Oats, Northern		45 a 46 $\frac{1}{2}$
do. Jersey		42 a 43 $\frac{1}{2}$
do. Southern		32 a 37
Peas, Black-Eyed	per 2 bush.	1 75 a —
White Peas		70 a 75
do. Beans, Southern		1 25 a 1 44
do. do Northern		1 44 a 1 75
Canadian Peas		60 a 65

GUANO.—We notice a sale of 25 tons Peruvian at \$47.

HEMP.—Duty: Russia and Italian, 30 per cent. ad val.

Manilla, Jute, and Sisal, 25 per cent.

The market for nearly all kinds continues inactive at nominal prices. Kentucky and Missouri dew-rotted hemp is freely arriving; the stock at present is about 9000 bales, and from advices received will probably reach very shortly to 12,000 bales; shipments eastward have, however, ceased, in consequence of the low prices. Many of the hemp farmers, both in Missouri and Kentucky, had been anxious to realize *in order to start for California*; the emigration from those two States, of farmers, including hemp growers, having been very considerable this spring. We hear of some small sales of dew-rotted at \$1 20 to \$1 25, and of Manilla several hundred bales at 9 $\frac{1}{2}$ c.; Russian is held firmly at \$2 20 a \$2 25, with a stock of about 250 tons.

HAY.—The demand for shipping has been moderate; the receipts have been considerable, and at easier prices; some 1200 bales sold at 58 a 62 $\frac{1}{2}$ c.

IRON.—Duty: 30 per cent. ad val.

The market has again slightly declined. We have to record sales of 200 tons English bar at 35 50, 6 months, which is a decline of 50c.; a small invoice of Swedish at \$80, from ship; 30 tons Gartsberry Scotch Pig at \$19 50. The foreign advices by the Hibernia are again unfavourable, as from the extract which follows of the London market.

Our quotations here are :—

Pig, Scotch, per ton	\$19 50 a \$20 00
Bar, English, refined	45 00 a 55 00
do. do. common	35 50 a 36 00
Sheets, do.	3 a 4½
Swedish	80 00 a 85 00
English Hoop	55 00 a 60 60

London market, per Hibernia, May 3: Although Pig Iron can be had at lower rates the demand is unimproved, and production does not diminish. Sales to a limited extent have been made in Scotch at 42 to 42s 6d for mixed, and at 43 to 43s 6d for No. 1. Rails are offered at £4 15s to £4 17s 6d, and few buyers are to be met with. Only limited sales have been made in foreign iron at low rates.

Provisions.—Duty: Cheese 30 per cent.; all others, 20 per cent. ad val.

Since our last there has been a fair demand for Pork for the trade, with a large speculative movement at the close, causing prices to rapidly advance. This activity has been induced by the falling off in the receipts at the different ports on the Lakes, as compared with last year. The present prices current are still below the actual cost, which induces greater firmness on the part of large holders. Prime mess has ruled dull; the demand for export has greatly fallen off, as compared with former years, owing in part to the bad repute in which it is held in the English market, the most of it here is quite unfit for that market. Some considerable parcels have been taken for the California market, not sufficient, however, to relieve this market, and the sales making are at irregular prices.

Butter and Cheese have arrived freely, and are dull at our revised quotations.

Our revised quotations are as follows:—

Beef, Prime, Co. & City	per bbl. \$5 25 a 6 12½
Pork, Mess, Ohio, new	10 62½ a —
Pork, Prime, Ohio, new	8 75 a —
Pork, Prime, Mess	10 00 a 10 12½
Lard, Ohio, Prime, in bbls	6 7½ a 7
Butter, State, inferior	7 a 10
Butter, State, fair to good	13 a 17
Butter, State, prime and choice	17 a 25
Butter, Ohio	7 a 12
Cheese	5½ a 7½

TOBACCO.—Duty: Leaf and Unmanufactured, 30; manufactured 40 per cent. ad val.

The market is dull; holders are firm beyond buyers' views. The small stock and impossibility of replacing it at current prices induce this firmness on the part of holders. From Liverpool, May 3, we learn by the Hibernia that the stock on hand on the 30th of April was 14,123 hhds. against 13,831 in the year preceding, and in London the stock was 24,270 hhds. and tierces of American, against 23,451 in 1849. Prices were firm with limited sales, not being over 700 hhds. in all the month of April. The most active demand was in Kentucky leaf and strips; the sales were 140 hhds. leaf and 400 strips at full previous prices.

WOOL (FOREIGN).—The demand has been better than ordinary in this month, and prices are well sustained. We quote sales of 140 bales Buenos Ayres, washed, at 16 a 17 cents; 100 bales washed Mazagan at about 29 cents; 40 bales unwashed Smyrna at 14 cents; and sales of Entre Rios at 20 a 22 cents; also some transactions in Peruvian at 30 cents.

WOOL (DOMESTIC).—The stock in market has been comparatively bare of Fleece wool for the past three weeks, consequently the operations have been limited. We hear, however, of sales of 25,000 lbs. at 24½ a 26 cts. or a reduction of 3 cts. per lb. from prices paid at the sale of Messrs. Cogill & Co.

In Pulled Wools there has been more activity, and several parcels have gone into consumption, 36 a 39 cts. for super, and 33 cts. for country pulled (Watertown), and 31 cts. for super, and 28 a 30 cts. for No. 1 city pulled.

Should the clip be delayed much beyond the usual time, the small quantity of Wool in the eastern cities will all be closed at present rates.

PRICES OF AMERICAN FLOUR IN ENGLAND.

THE effects of free trade in that country, is described in the May number of the "*Farmer's Magazine of London*." We wish we had room for the whole article. The editor says: "The more rational of the free traders have long since discovered that to lower the value of agricultural produce in this country below the cost of production, by importations of foreign corn, is not likely to be so advantageous to themselves as they at one period anticipated. They have already found out, that the falling off in the home demand for manufactures, in consequence of the altered position of our farmers, has lessened their trade, and curtailed their profits far more than it has increased an export demand. A change is therefore gradually taking place in public opinion, which would certainly manifest itself plainly in case of a general election. Meanwhile, her majesty's ministers seem determined to stick to their places as long as possible, and farmers need look for no relief from the present government."

After quoting the last accounts of New York prices for flour, the editor says: "It is considerably higher than at Mark Lane; and it would *almost pay to ship the article from Liverpool to New York!*"

He then gives the imperial averages for the last six weeks in England, prior to the 1st of May, 1850.

WEEK ENDING	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
March 16, 1850,	38	1	23	8	14	11	22	7	24	1	25	2
March 23, 1850,	37	8	23	4	13	2	23	5	23	11	25	2
March 30, 1850,	37	9	23	6	15	2	21	7	23	10	25	3
April 6, 1850,	38	1	23	2	14	10	21	6	23	8	24	5
April 13, 1850,	38	5	22	11	15	3	20	8	23	9	26	3
April 20, 1850,	37	10	22	8	15	3	21	6	23	2	24	9
Aggregate average of last six weeks,	38	0	23	2	15	1	21	11	23	10	25	2
Comparative average same time last year,	44	6	28	9	16	10	24	5	28	10	30	7
Duties,	1	0	1	0	1	0	1	0	1	0	1	0

Now, as has been the effect of free trade in England, so is the effect of the diminution of the duties since 1846 in this country. It not only diminishes the power to consume, by persons engaged in the iron, the coal, the cotton, and the woollen business, but it drives the labour employed in them to the plough—making rivals in place of consumers—yet for teaching this truth, and illustrating it in a thousand ways, here is one of our rewards.

"COLUMBIA, S. C. May 15, 1850.

"TO J. S. SKINNER.

"DEAR SIR—A few days since I paid Edwin A. Evans, assistant for J. E. James, six dollars for my subscription to "*The Plough, the Loom, and the Anvil*," up to June 1850. I will now thank you to discontinue it.

Yours respectfully."

This is from Mr. J. C. S., a gentleman of ample fortune and the highest respectability. Yet, in England, the great champion of free trade, for coaching and speaking and feasting about the country, was rewarded with \$350,000 in one lump! while we are left to struggle for life, with difficulty to keep our chin above water. So the world goes!

Here is what a *London* paper says of the principles we are maintaining:—

"If Gen. Taylor shall succeed in carrying out his views, he will be the greatest man that America has yet produced, and the magnificent benefactor of his country. The Americans have coal, iron, timber, and can raise sufficient cotton for the world. They have exhaustless supplies of corn and provisions, cheap and fertile lands, and they have no taxes worth mentioning. Why, then, should they not manufacture for themselves? Why should cotton be brought four thousand miles to England, to be spun and woven in Lancashire, and be carried some three or four thousand miles more to the United States to be consumed? We cannot see any reason for it. It is true, that England has had the start in manufactures, but what right has she to expect to be always first in the race? The Americans are not only justified in protecting their own interests, but, as the President says, 'It is the right and duty of Congress to encourage domestic industry, which is the great source of national wealth and prosperity.' Sounder policy was never broached; truer words never uttered."

If, in our country, the party ruling in Congress now, could only see with the sagacity that is supposed to characterize successful politicians, they would take the wind out of

the sails of their adversaries, by securing protection to American labour. They would admit, with General Jackson, that "we have been too long subject to the policy of British merchants." The party that does that, whatever may be its name, will finally triumph, whatever may be the ups and downs of parties in the mean time. That is the party that must ultimately come into the permanent enjoyment of power, for it will be in fact and in truth the people's party, and they would let such a party, in all things else, do pretty much what it pleased.

WOOL HUSBANDRY IN VIRGINIA—CONFIRMATION OF ALL THAT COL. RANDALL HAS SAID ON THE SUBJECT—THE SUPERIORITY OF HIS WORK ATTESTED BY A FIRST-RATE JUDGE.

To J. S. SKINNER, Esq., *Editor of the Plough, the Loom, and the Anvil.*

DEAR SIR:—I enclose you an exceedingly interesting letter from Mr. Allen, of Virginia, to Col. Long, of this city, which you may publish in your valuable journal. It was accompanied by some specimens of wool, which I will take the earliest opportunity of examining.

I am very respectfully yours,

P. A. BROWNE.

May 18th, 1850.

The following letter, as will be seen, was not written for the public eye, but whatever the writer may say to them, we are very much obliged to the friends, who think with us, that such lights should not be hid under a bushel.—ED. P. L. & A.

Mount Prospect, May 13th, 1850.

MY DEAR SIR:—Accept my cordial thanks for "Randall's Work on Sheep Husbandry in the South," until I can make you a more fit return. I prefer it to either Morrell's or Youatt's works on the same subject. As a friend has applied to me for some samples of the fine wool grown in this neighbourhood to send to some gentlemen in Rhode Island, I have divided the samples collected, and now send you one-half of them. I do this, because I discover from the March and May Nos. of the "Plough," &c., that you were kind enough to hand those specimens I gave you in 1848 to Mr. P. A. Browne, of your city. Those samples were taken from the fleeces after the sheep had been washed and sheared—these were drawn in accordance with the directions given by Mr. B. The specimens from my flock may not all be equal to those I gave you in 1848, as we drew them from the sheep most easily caught, and, I would add, from the largest and fattest sheep, judging from the quantity of oil in the wool. They are, perhaps, a good average of my flock. As you have specimens of Nos. 1, 3, and 6 for 1848, I now send you specimens from the same bucks for the years 1849–50. The two former washed and sheared—the latter drawn and unwashed. This will enable Mr. B. to ascertain whether there has been any deterioration in the wool. It would have been better if all had been drawn and unwashed. The Messrs. Patterson, of Bedford, are sons of Mr. J. Patterson, of Washington county, Pennsylvania, and their sheep are a part of his Pennsylvania flock of Saxons. Having been brought up to the business, they are quite conversant with all the details of sheep-husbandry, and the specimens of wool from their flocks are doubtless drawn from their finest woolled sheep. Mr. Kelso and myself purchased our sheep from Mr. J. Patterson, and as we limited him as to the price (say five dollars for the ewes), if there is much difference in the wool, it is owing mainly to the sheep and their management, and not to the soil, climate, or grasses. Indeed, I think this Piedmont country (commencing with Loudon and running to Patrick and further south), is the best region of country for the finest woolled sheep in Virginia, or perhaps in the United States. It has been nearly three years since I commenced the business without any experience, with 65 ewes, 50 lambs, and 194 wethers. These sheep have never been housed at any time, except when lambing; then the ewes and lambs are driven under cover at night. In the day-time the cover is an open shed, under which they may stay or not, as they please, though it would be best to confine them under the cover in a snow-storm or cold rain. The other sheep take the weather as it comes, without shelter of any kind. We have to feed but little in the winter, snow never covering the southern aspects longer than twenty four hours at a time, so that by getting our lands well-set and planted with grass (and all the natural and artificial grasses readily take and hold here) and retaining a part of our pasture for winter (and the orchard grass remains green most of the winter), our sheep could live well throughout the winter *without any grain, hay, or fodder*. Indeed, the coarse sheep of some of my neighbours now live all winter in my old fields. The *fine* sheep are healthier in large flocks than the *coarse* ones. Most of the diseases which afflict sheep elsewhere

(especially in England), are as yet unknown to us here. It is not as *hot* here in mid-summer as in Pennsylvania or Connecticut. The wool does not become coarser, but gradually gets more cotton or silk-like, and *I think* the fibre becomes larger, and that there is no diminution in *quantity*. Its other properties others must speak of who have the means of testing them. My land is elevated, say some 400 or 500 feet above the James River at Lynchburg. Indeed, so thoroughly convinced am I of the *superior and peculiar fitness* of the climate, soil and grasses of this country for the rearing of the *fine* woolled sheep, and that sheep husbandry is the quickest and cheapest mode by which to restore the fertility of these once fertile lands, that, had I the means, I would soon have from 3000 to 5000 Saxon sheep, where I now have but about 500. I wish some of your millionaires would but just think of this and me when they are casting about for objects on which to squander their money, and deposite some \$15,000 or \$20,000 to my credit in one of our banks. Then I would soon prove to our people the value of this land and of sheep-husbandry. My clip of 1848 was sold to Mr. Lawrence, of Lowell—that of 1849 sent to the wool depot at Kinderhook, and highly spoken of at both places. As I discover that Messrs. Bennett, Mortin & Co. have a wool establishment in your place, I will show their circular to the Messrs. Patterson's, and perhaps we may send our wool of this year's clip to them, that the wool-growers of Pennsylvania, &c., may see that we can raise fine wool in Eastern Virginia. I write carelessly, and for you alone. You must excuse the trouble I have imposed on you to hand these samples, unhandled, &c., to Mr. Browne, and be assured that it will always afford me great pleasure to reciprocate acts of kindness. With respect to your lady and self, believe me, ever your friend, &c.,

ROBERT ALLEN.

For "The Plough, Loom, and Anvil."

CALENDAR OF OPERATIONS.

SPRING, with all her coquetry, is about taking her departure. The northern breezes will be succeeded by those of the balmy south. Flowers will succeed foliage, and by all present indications, Pomona will visit us fully loaded, to crown the labours of the husbandman and gardener.

The present season here is three weeks later than the average. The lilac—*syringa vulgaris*—is generally in full bloom about the first of May, whereas, this season they are at this date, 20th, in perfection. The vegetable garden is exceedingly backward; many of our neighbours, who are adepts in gardening, have just planted their Lima beans the third time, and we are on the eve of planting a four acre lot. Sow beets for a full winter supply any time this month; they will do after the early crop of peas or lettuce has come off the ground. The early horn carrot will also be in time. Sow tomatoes in the ground for a late supply; stake up those already planted to bring them a few days earlier. As soon as the fruit begins to change colour, cut off the vines, and thin out the leaves to allow the sun full power upon the fruit. Prepare ground for early celery; dig deep—manure well (three or four inches thick at least), and give plenty of water. Many use this element very sparingly, and yet waste thousands of gallons of the best dish washings, soapsuds, &c.; all run off in a drain, or slushed on the ground near the pump till it becomes a nuisance. I have every drop saved by a conduit from the pump trough into a cistern from whence it is drawn at pleasure, and proves a rich vegetable fertilizer for the vegetable crop. The stalks of rhubarb watered with it are ten inches in circumference. Celery and cabbage watered with it are no imitations. Stir up all the vegetable crops with the hoe; keep the ground free and friable; dig down old strawberry beds; manure the ground, and plant with cabbage, or sow snap-short beans for a late crop; place stakes or rods to tall late peas, and see that your running beans are tied to the poles till they hold and run for themselves; neatness and accuracy in every movement and business is the index of a good workman. Plant more sugar-corn, and continue to do so every few weeks, that it may always be young and tender for the table. Do not cut from your asparagus beds longer than three weeks; it weakens the plants for next. Sow yellow or white summer radish in any spare ground; sow a bed of cucumbers for pickling—any of the short cucumbers will do for the purpose, though the sort called *short green* is preferable.

The farmer, it is presumed, has got in all his corn crop, and his attention is more given to good cultivation and destruction of weeds. You see him early in the morning and late in the evening with an eye upon his enemies. We never step except with the hold of an implement: the plough, the cultivator, the hoe, the spade, or the weeding hook are familiar to us. The crows, and our neighbours' chickens in former sea-

sons, made love to our corn fields: this season we soaked our corn a few minutes in half gas tar and half water, and then mixed dry sand with it to separate the grains; by this process we have happily defeated our enemies. One half of our field is manured; the other half we will apply guano to about the first week in June. Whilst on the guano, allow me to call special attention to this convenient fertilizer. Last November, a tenant gave up to me a field that had been cultivated with several crops, such as potatoes, corn, and vegetables, which left the ground in a very unequal state; I, however, sowed the whole in wheat, at the rate of one and a quarter bushel to the acre. It came up very regularly, but, as some supposed, too thin; before Christmas, the growth showed, evidently, the state of the ground. Where the potatoes grew it was all that could be desired; the other portions were good, bad, worse. In the last week of March, I mixed genuine Peruvian guano with twice its bulk of half dry sand, and sowed it, before rain, over those parts that had not been cropped with potatoes, at the rate of two and a half cwt. to the acre; and over a portion that was very poor and yellow, we doubled the sowing so that it got about five cwt. to the acre. We have now the satisfaction of witnessing the field of one uniform appearance. The effect was almost instantaneous; the plants have tillered finely, and we have no doubt of reaping a very uniform crop. Genuine Peruvian guano will give an ash almost entirely soluble in acids, leaving only one and a half, or at most, two per cent. of sand, whilst the adulterated specimens contain from twenty-five to forty per cent. of insoluble matter. Even stones as large as pigeons' eggs are included in the wretched composition which we, in our verdancy, purchased at a heavy loss, and, for one season at least, was not an advocate of this admitted boon to the farmer on the Atlantic board. We are credibly informed that the genuine article cannot be sold for less than forty-five or forty-six dollars per ton of two thousand lbs.; and we know merchants of the very highest integrity, who have had consigned to them, and have sold an article of the most worthless description. The average weight of a bushel of pure Peruvian guano is about sixty-eight pounds, whilst the spurious far exceeds that weight, owing to the ingredient being clay or gravel used in its composition. On this subject a question may arise: Can the farmer refuse payment for adulterated guano, or can he recover from the dealer for loss of money and loss of crop?

MARYLAND AVERAGE CROPS.

As we expect no more returns, we will present in the July number, such views as are warranted by the few we have.

We placed, at our own expense, a printed tabular form, in the hands of a prominent agriculturist in every election district in Maryland, and with the Delegation from every county in Virginia and in Pennsylvania—from the former of the last two States we received *returns* from two counties, and from Pennsylvania *not one*. W. W. W. Bowie, Esq. promptly answered, and gave the averages for Prince Georges, Maryland, as follows:—

Wheat 8 bushels—increase per cent. in 20 years, 12; Indian corn 40, increase per cent. 10; oats, 20; buckwheat, 20; potatoes, 100; increase 20—turnips, 300; increase 80—tobacco 800 pounds; decrease 10—peas 20 bushels. Hay 3000 pounds per acre, increase per cent. in 20 years 5 per cent.; average milk per cow per day, while at the pail, 6 quarts. Wages per month, besides being found, for males, \$7; females, \$3; by the year, males, \$60; females, \$30. These are generally slaves, it is presumed. Meagre as are the returns from Maryland, they offer scope for interesting comment.

The result of this apparently well digested attempt, however, proves how vain would be the effort to accomplish for the agriculture of a country of almost unlimited extent, what is proposed by the bill in the Senate, with machinery and appliances so inadequate as that which it provides. Not a tenth part as much force or means, as are provided for either of the military schools. Perhaps, however, like them, it may grow from the smallest beginning into something worthy of the nation, if, like them, it can be kept uncontaminated by party influence.

MR. P. A. BROWNE'S RESEARCHES ON HAIR AND WOOL.

We regret that preoccupation of all the space at our command will prevent us from giving the Report of the Committee on Agriculture at Harrisburgh, which closes with the following:—

Your committee, therefore, recommend that the prayer of the memorialist be granted, and that the Governor of this Commonwealth be requested to aid in bringing before the public this valuable information, by subscribing for three hundred copies, which will enable Mr. B. to publish it, as he says, in the land of his birth.

TO OUR READERS AND CORRESPONDENTS.

✎ We authorize the friends of the Plough, the Loom, and the Anvil, to pledge us, that the next volume shall be improved over its predecessors, in full proportion to any accession of patronage.—The fact is, friends of American industry, we must have five hundred more subscribers for the third volume, and then we shall go smoothly on, with a taught sheet and a spanking breeze.

✎ Mr. B. of Mississippi, your request about the cost, &c., of putting a certain number of spindles in operation, is not forgotten, as you will see in the July number. We have referred it to a friend, whose means of information are reliable as are his own intelligence and good-will.

What is needed in the South, is plain, practical, and minute information, that would enable them to begin to use their materials and their water power on a small scale.

“Larger boats may venture more,
But little barks should keep near shore.”

As poor Richard says.

✎ Among the subjects to which we shall pay early and earnest attention, is that of *plank roads*, so well adapted, as they begin to think, to agricultural uses in the southern States. Here too, what is needed, and what we shall endeavour to get, is such minute particulars as would enable a common carpenter to construct one. Their durability of course must depend greatly on the quality of the timber used, the climate, &c.

✎ We shall give a valuable prize essay, with cuts, on the preparation of *peat charcoal* and charcoal from *wood*.—The former, again, for the use of our readers in the East, where only the climate admits of the formation of peat. In southern latitudes more thorough putrefaction supervenes too rapidly.

✎ The Maryland Agricultural Committee. We had in type, with many other things which we were obliged to postpone, some remarks on the official doings, or omissions, of this committee. Right well do we know that such strictures are not calculated to get subscribers or to make friends: much easier and more agreeable would it be to “lay dark,” or to flatter, painting all things *coulcur de rose*; but, when a man has taken the bounty, is he not bound to fight on occasion?

✎ **COMPOUND INTEREST.**—The following simple rule will show the number of years in which a single sum will become double in amount, by the accumulation of compound interest, for all rates of interest not exceeding 10 per cent.: Divide seventy by the rate of interest per cent., and the quotient is the number of years required. Thus, 70 divided by ten will give 7 years; by five, 14 years; by four, nearly 18 years; by three, nearly 23 years; by two, 35 years.—*News-paper paragraph.*

READINGS FOR MOTHERS AND CHILDREN.

THE CHILD AT PRAYER.

A few weeks since, in coming down the North River, I was seated in the cabin of the magnificent steamer, Isaac Newton, in conversation with some friends. It was becoming late in the evening, and one after another, seeking repose from the cares and toils of the day, made preparations to retire to their berths. Some pulling off their boots and coats, lay them down to rest; others, in the attempt to make it seem as much as possible like home, threw off more of their clothing; each one as his comfort or apprehension of danger dictated.

I had noticed on deck, a fine looking little boy of about six years old, following around a man evidently his father, whose appearance indicated him to be a foreigner, probably a German; a man of medium height and respectable dress. The child was unusually fair and fine looking, handsome featured, with an intelligent and affectionate expression of countenance, and from under his little German cap, fell his chestnut hair in thick, clustering, beautiful curls.

After walking about the cabin for a time, the father and son stopped within a few feet of where we were seated, and began

preparations for going to bed. I watched them: the father adjusted and arranged the bed the child was to occupy, which was an upper berth, while the little fellow was undressing himself. Having finished this, his father tied a handkerchief around his head, to protect his curls, which looked as if the sunlight from his young happy heart always rested there. This done, I looked for him to seek his resting place. But, instead of this, he quietly knelt down on the floor, put up his little hands together, so beautiful, child-like, and simple, and resting his arms on the lower berth against which he knelt, he began his vesper prayers.

The father sat down by his side and waited the conclusion. It was, for a child, a long prayer, but well understood. I could hear the murmuring of his sweet voice, but could not distinguish the words he spoke.—But what a scene! There were men around him, Christian men, retiring to rest without a prayer; or, if praying at all, a kind of mental desire for protection, without sufficient courage or piety to kneel down in a steamboat's cabin, and before strangers, acknowledge the goodness of God, or ask his protecting love.

This was the training of some pious mother! Where was she now? In a distant land, in her cold grave sleeping! How many times had her kind hand laid on those sunny locks, as she had taught him to lisp his prayers?

A beautiful sight it was, that child at prayer, in the midst of the busy and thoughtless throng. He alone, of all the worldly multitude, draws nigh to heaven. I thank the parental love that taught him to lisp his evening prayer, whether Papal or Protestant, whether far off or nigh. It did me good; it made me better.

I could scarce refrain from weeping then, nor can I now, as I see again that sweet child in the crowded tumult of a steamboat's cabin bending in devotion before his Maker.

But a little while before I saw a crowd of admiring listeners gather about a company of Italian singers in the upper saloon—a mother and two sons, with voice, and harp, and violin. But no one heeded, no one cared for the child at prayer.

When the little boy had finished his devotions he arose and kissed his father most affectionately, who put him into his berth to rest for the night. I felt a strong desire to speak to them, but deferred it till morning. When morning came, the confusion of landing prevented me from seeing them again.

But, if ever I meet him, in his happy youth, in his anxious manhood, in his declining years, I'll thank him for the influence and example of that night's devotion,

and bless the name of the mother that taught him to pray.

Scarcely any passing incident of my life ever made a deeper impression on my mind. I went to my room and thanked God that I had witnessed it, and for its influence on my heart. Who prays in a steamboat? Who train their children to pray, even at home?

A LITTLE ANECDOTE FOR LADIES.

We remember somewhere to have read a story of a youth, who, hesitating in his choice between two ladies, by both of whom he was beloved, was brought to a decision by means of a rose. It happened one day all three were wandering in a garden, that one of the girls, in her haste to pluck a new blown rose, wounded her finger with a thorn; it bled freely, and applying the petals of a white rose to the wound, she said, smiling, "I am a second Venus; I have died the white rose red." At that moment, they heard a scream; and fearing the other young lady, who loitered behind, had met with an accident, hastened back to assist her. The fair one's scream had been caused by no worse an accident than had befallen her companion. She had quite angrily thrown away the offending flower, and made so pertinacious and fretful a lamentation over her wounded finger, that the youth, after a reflection, resolved on a speedy union with the least handsome, but more amiable of the two young friends. Happy would it be for many a kind-hearted woman, did she know by what seeming trifles the affection of those whom she loves may be confirmed or alienated forever.

It once fell under our observation, that a very young and unsophisticated lady, without intending it, who was not excellent as a musician, bore off the palm from her young contemporaries, because when called upon, she would willingly, and without importunity, take her seat at the piano and do the best she could, saying, very frankly, that, though she was conscious of no extraordinary power to please, it would give her pleasure to do for her friends and the company the best she could to contribute to their amusement. She was very early married, and has ever since continued to act on the same principle of good sense, and genuine good manners, making friends without designing it, in every society of which she has been a member, and helping to counteract the less popular manners of her husband.

Thus, how true it is, that the rugged ways of life are made smooth by what Sterne calls "the small sweet courtesies of life," which, to some, seem to be natural, and which, by others, are neglected, or underrated.





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